Dec. 1, 1959 O. E. SPENCER 2,915,198

RAILROAD CAR CUSHIONING MECHANISM

Filed April 13, 1955 2 Sheets-Sheet 1

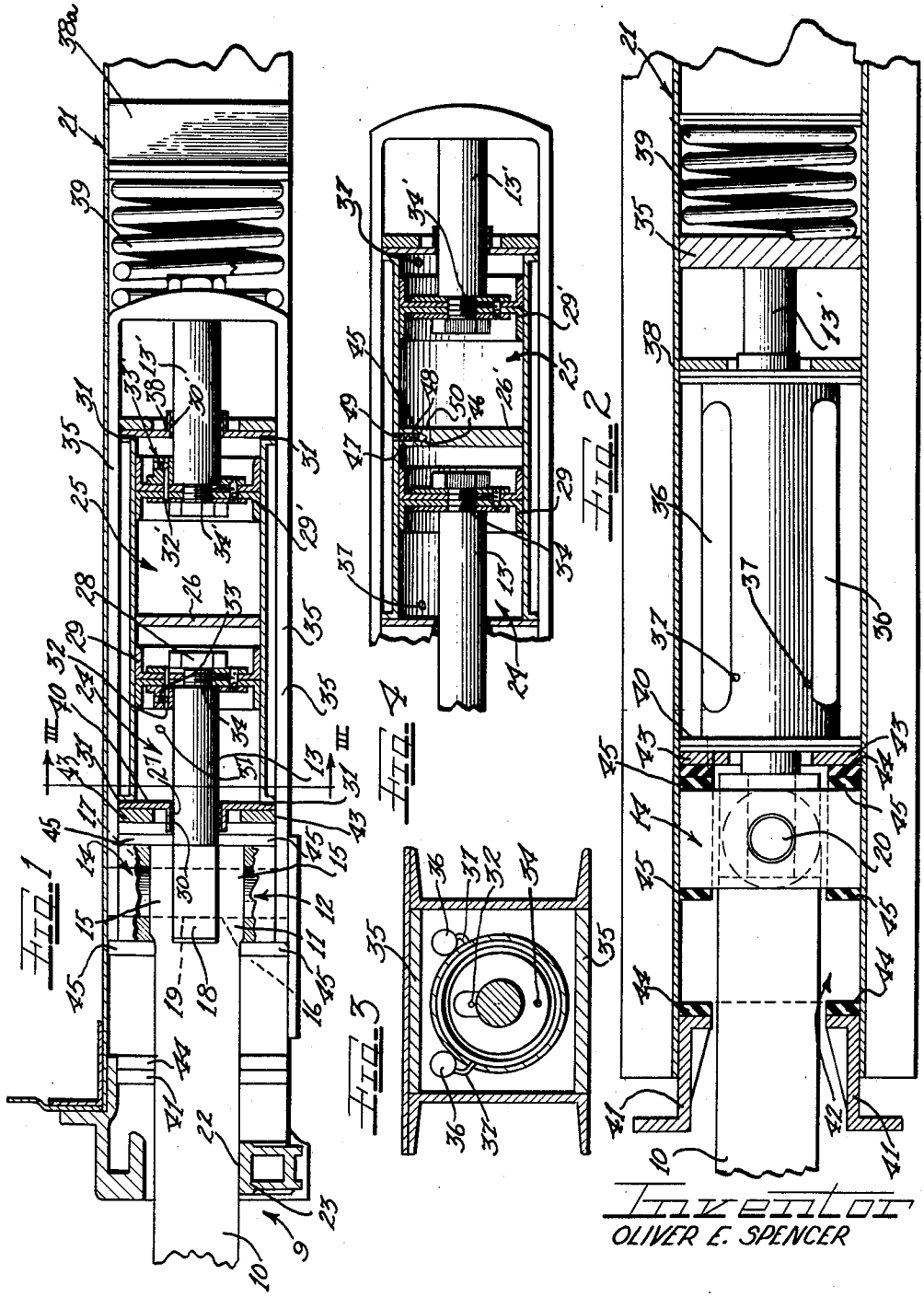


FIG. 1

FIG. 4

FIG. 5

FIG. 2

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RAILROAD CAR CUSHIONING MECHANISM

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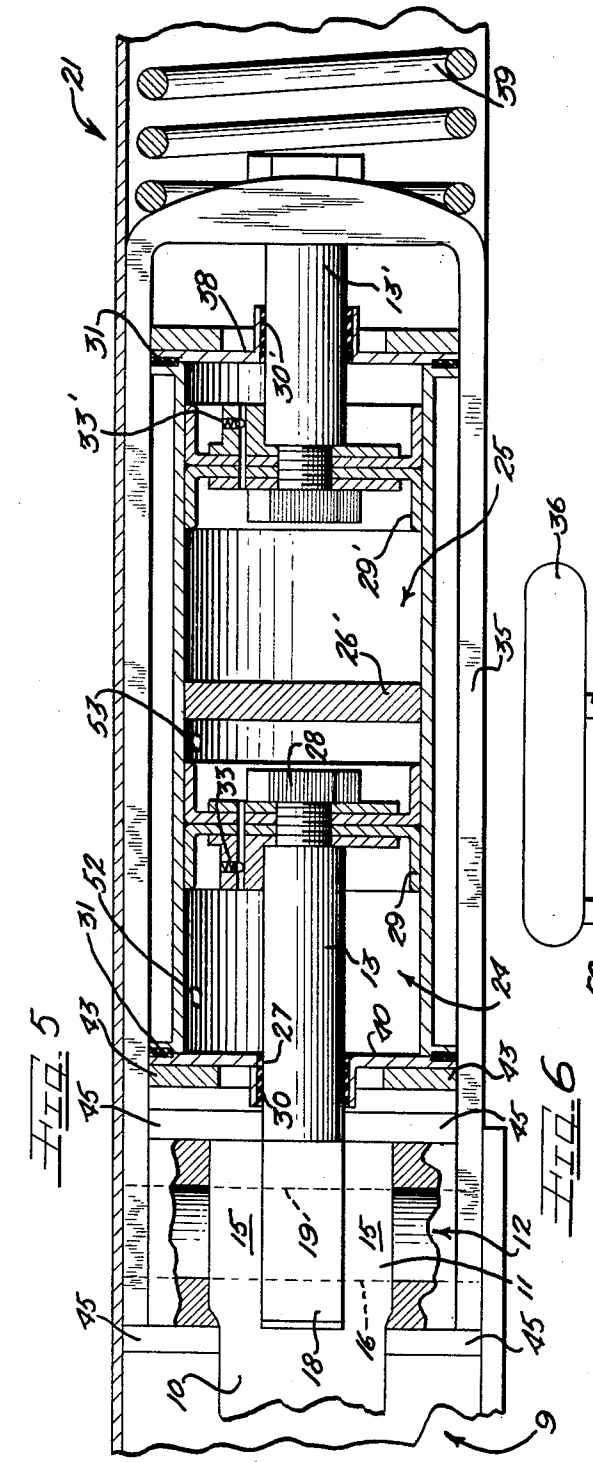


FIG. 5

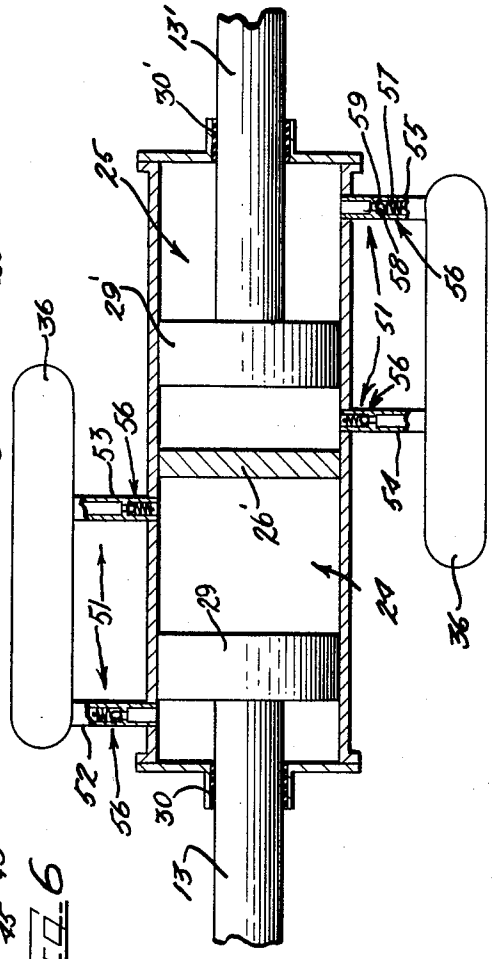


FIG. 6

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2,915,198

RAILROAD CAR CUSHIONING MECHANISM

Oliver E. Spencer, Newton, Kans.

Application April 13, 1955, Serial No. 501,027

15 Claims. (Cl. 213—43)

This invention relates to a railroad car draft gear and more particularly to gearing which embodies novelly interrelated composite dampening and buffer mechanism.

Heretofore, it has been the practice to use cushioning or friction springs for withstanding forces such as impact forces applied to a coupler draw bar. Due to variations in manufacture as well as the likelihood of crystallization, springs have not always proven to be satisfactory. Also, when such springs are used, limit or stop pins are also employed, which are likely to shear off under sudden impact or force.

Since one of the greatest problems confronting railroads in the handling of freight at the present time is damage to cargo by virtue of sudden impact forces due to sudden stopping of freight cars and the like railroad engineers throughout the country are striving to reduce the staggering amounts of losses occasioned thereby.

One of the main aims of this invention is to provide a draft gear which will more effectively cope with the foregoing serious railroad problem.

An object of this invention is to provide a more efficient form of railroad car draft gear.

Another object of the invention is to provide a railroad car draft gear embodying fluid dampening means interrelated in a novel manner with a pivotally supported draw bar.

Still another object of this invention is to provide in a railroad draft gear, draw bar travel limiting means which will minimize the likelihood of parts shearing and further minimize the extent of transmission of shock to the car in the event of sudden impact.

Yet, another object of the invention is to provide cushioning and dampening mechanism for a railroad car of such arrangement with respect to a pivotally supported end of the draw bar as to greatly reduce the likelihood of transmission of injurious shock to the car upon sudden impact forces being applied to the draft bar.

A further object of this invention is to provide a railroad car draw bar or gear with buffer elements for the draw bar both on the frame structure and the bar guide so that at least one set of elements will be in engagement in either extended or retracted position of the draw bar.

Another object of this invention is to provide a railroad car draft gear with dampening mechanism of such arrangement so that impact forces in either buff and draft positions will be exerted towards a dividing member separating dampening chambers of the mechanism thereby greatly minimizing the pressure on seals at the points where piston rods of the mechanism extend into the respective chambers.

Another and further object of this invention is to provide a novel draft gear of such construction and dimension that it will be capable of being used in the standard draft gear pocket.

Another and still further object of this invention is to provide a railroad car draft gear with flow control means

located on a dividing member separating dampening chambers such that the same flow control means is used in dampening by both pistons thereby simplifying the flow control means or valve arrangement.

A still further object of this invention relates to the provision of a novel check valve arrangement which facilitates in the restoration of any fluid that may have leaked by the pistons to the respective cylinders.

In accordance with the features of this invention, there is provided in a railroad car draft gear, hitching means having a pivotal draw bar, a supporting frame structure in which an end of the bar is disposed, a guide slidably supported by the frame structure, the guide being connected to the pivotal draw bar, and fluid dampening means connected to the guide for resisting longitudinal sliding movement of the guide relative to the frame structure, the dampening means including at least two dampening chambers separated by a dividing member, each of the dampening chambers having a piston, the piston being movable in the chamber in response to impact force, one of the pistons serving to dampen the impact force in buff and the other of the pistons serving to dampen the impact force in draft.

In accordance with other general features of this invention, there is provided in a railroad car draft gear a first set of resilient buffer elements secured on opposite longitudinal sides of a guide and a second set of resilient buffer elements each of which is secured to the frame structure at opposite ends of the longitudinal path of movement of the guide.

Still another feature of this invention relates to the provision in a railroad car draft gear of dampening means including at least two dampening chambers separated by a dividing member, the dividing member having flow control means, each of the dampening chambers having a piston movable therein in response to impact force, one of the pistons dampening the impact force by way of the flow control means in buff and the other of the pistons dampening the impact force by way of the flow control means in draft.

Still another feature of this invention relates to the above flow control means comprising a single reversible valve.

Other objects and features of this invention will more fully appear from the following detailed description taken in connection with the accompanying drawing which illustrate several embodiments thereof and in which:

Figure 1 is a fragmentary side view partially in cross section of the draft car cushioning mechanism highlighting my novel cushioning and dampening mechanism;

Figure 2 is a fragmentary plan view partially in cross section of the same draft car cushioning mechanism further highlighting the features of this invention;

Figure 3 is a cross sectional view taken substantially on the line III, III of Figure 1 looking in the direction indicated by the arrows;

Figure 4 is a fragmentary side view, partly in section similar to Figure 1 but showing a modified flow control arrangement;

Figure 5 is an enlarged fragmentary cross sectional view with parts in elevation, similar to Figure 4 but highlighting a modified valve arrangement; and

Figure 6 is a diagrammatic view of the modified valve arrangement shown in Figure 5.

As shown on the drawings

The reference character **9** in Figure 1 indicates generally my novel railroad car draft gear. The draft gear **9** is of such construction that it extends longitudinally of the length of the railroad car (not shown) and may be connected to the same by any suitable means, such as, bolting the same to the transverse and longitudinal sills

(not shown) located on the underside of the conventional railroad car.

My novel draft gear 9 has a conventional coupler or hitching means (not shown) at one of its longitudinal extremities. Integrally connected to the coupler is a draw bar or rod 10 which terminates in a bifurcated end portion 11 which is in turn secured by pivot means designated generally by reference numeral 12 to a first piston rod 13.

The pivot means 12 in the illustrated embodiment is wholly disposed within a cavity located in the central portion of a block or guide 14 which is best illustrated in my copending case entitled "Railroad Car Cushioning Mechanism," filed June 15, 1954, Serial No. 436,800.

Referring now more specifically to the pivot means 12 (Figure 1), it will be seen that each of the respective prongs 15, 15 constituting the bifurcated end portion 11 is vertically apertured at 16 as shown by the dotted lines in Figure 1. The dotted lines seen in Figure 1 indicated by the numeral 17 show how the block 14 is vertically apertured. Similarly, terminal end 18 of the piston rod 13 is apertured at 19 so that when the terminal end 18 of the piston rod 13 is internested between the prongs 15—15, the respective apertures 16 and 19 of the draw bar and piston rod are vertically axially aligned with the aperture 17 of the block 14 in order to receive therethrough pivot pin 20 (Figure 2) serving to fixedly secure the block 14 with relation to the bar 10 and rod 13.

By reason of this novel interconnection of parts, the draw bar 10 may pivot about the pivot pin 20, in response to transverse variations of force applied on and through the draw bar coupler such as are encountered in the usual railroad car coupler.

This novel interconnection has a further function in allowing the draw bar 10, the piston rod 13 and the block 14 to respond unitarily to longitudinal forces so that each of the aforementioned parts may efficiently accomplish their respective functions while acting as a unit.

As best seen in Figures 1 and 2, it will be perceived that the draft gear 9, excepting the hitching means (not shown), is mounted within a main housing or frame means indicated generally at 21. It will also be seen in Figure 1 that the draw bar 10 is loosely supported at 22 by a transverse cross support 23, which is suitably secured to the main housing 21, so as to permit horizontal pivoting of the draw bar.

In the illustrated embodiment of my invention a pair of fluid receiving cylinders 24 and 25 are in longitudinal opposed relation and are separated by a dividing member or wall 26 and with the cylinders carried by the frame means 21. The cylinders 24 and 25 are adapted to provide dampening means so as to cushion longitudinal impact forces applied through the coupler (not shown).

The first cylinder 24 is apertured at 27 (Figure 1) to permit the piston rod 13 to extend therethrough when the rod 13 is bolted at 28 to a longitudinally movable piston 29. A suitable fluid seal 30 may be disposed around rod 13 in aperture 27. Also, the cylinder 24 may, if it is so desired, be mounted on rubber at 31 in a floating arrangement so as to always have piston rod 13 in alignment with draw bar 10 and thus minimize wear on the piston parts and seal.

The piston 29 is adapted to conform generally to the cylindrical bore of the cylinder 24 and to slide longitudinally within the confines of the cylinder 24. In Figure 1, the piston is shown to be apertured so as to provide a longitudinal passageway 32 through which dampening fluid may pass. Positioned adjacent and extending vertically into the passageway 32 is a metering device 33 of the conventional ball and screw type which is manually adjustable and capable of regulating the rate of fluid flow through the piston 29. This metering device 33 may also be of the self-adjusting type as shown in my aforementioned copending case. By adjusting the device the dampening action of the piston may be pre-set as desired.

In addition to the metering device 31 a relief valve is mounted on the piston at 34. This valve is of unidirectional liquid flow type. In other words, when a buff impact force is applied urging the piston 29 toward the cylinder wall 26 the relief valve is closed. If a draft impact force is applied urging the piston 29 forward of or away from the cylinder wall 26, as hereafter further described, the valve 34 is then opened permitting a free flow of fluid through same.

Relative to the second cylinder 25 it will be appreciated that the same is of substantially identical construction as that of the first cylinder 24. To facilitate identification of similar elements corresponding but primed numerals have been used to identify similar parts.

The second cylinder is suitably joined to the guide or block 14 by means of a yoke 35 which has attached to it a piston rod 13' and piston 29' which move longitudinally of the frame 21 in much the same manner as the first piston rod 13 and piston 29 in response to forces applied to the draw bar 10.

The principal distinction between the construction of the two cylinders is that the relief valve 34' on the piston 29' works in the reverse of the relief valve 34. That is, as a draft or forward impact force is applied to the draw bar 10 with the resulting force being transferred through the guide 14 and the yoke 35, the relief valve 34' on the piston 29' is closed thus permitting liquid to flow through the channel 32' and be regulated by a metering device 33'. While this is occurring the relief valve 34 on the piston 29 is open thereby permitting the piston 29 in the first cylinder to move freely exerting at best a nominal pressure on the forward longitudinal end of the cylinder 24.

Thus it will now be perceived that by virtue of the instant fluid dampening arrangement the buff and draft impact forces will be dampened by separate cylinders in such a manner that the dampening forces exerted by the respective pistons will be directed toward the common dividing member or wall 26. It is in this manner that the forces set up in the dampening action of the piston are no longer applied on the respective longitudinal opposed ends of the cylinders thereby minimizing leakage in the seals 30 and 30' and relieving other associated problems which may have arisen as a consequence.

In order to compensate for the displacement of liquid occasioned by the entrance of the piston rod 13 and 13' into the cylinders 24 and 25' a pair of fluid reservoirs 36—36 have been mounted externally and on opposite sides of the cylinders (Figures 2 and 3). Each of these reservoirs 36—36 has a duct 37—37 one of which leads into the cylinder 24 and the other into the cylinder 25. Hence, as the piston rod progressively moves into the cylinder an amount of liquid is displaced by the rod necessitating a reservoir or other similar means to drain off the excess fluid. Then as the guide 14 returns to normal position a proportionate amount of liquid is drawn back into the cylinder from the reservoir.

Cylinder 25 has at one end a vertical end cylinder wall 38 through which the piston rod 13 extends. A compression spring or spring means 39 is disposed between cylinder wall 38 and gear wall 38*a* and acts against the pistons 29 and 29' through the yoke 35 to return them to a normal position. Normal position may be defined as the period of operation when the block 13 is in longitudinally spaced position to the cushioning elements subsequently described. The spring 39 has a propensity to urge the pistons 29 and 29' toward the other vertical cylinder wall 40 so as to hold the pistons in normal position. Normal position of the pistons may be defined as a position whereby the pistons are axially spaced from the axially opposite end walls of the cylinders 24 and 25'. Hence, after a longitudinal impact force has been applied to the draw bar and transmitted to one of

the pistons depending on whether it is a buff or a draft impact force, the spring will gradually urge the piston to return to its normal position so the pistons will be in proper position to dampen subsequent impact.

Referring now to Figure 2, it is seen that the housing 21 has a pair of integral angular stop flanges 41—41 mounted thereon in opposed relation adjacent the longitudinal opening 42 of the housing and through which the draw bar 10 projects. It is also seen that there is a pair of vertical stop flanges 43—43 likewise mounted on the housing 21 in opposed relation but between the guide block 14 and the cylinder wall 40.

Mounted on each of the flanges 41—41 and 43—43 is a resilient cushioning buffer element 44, made out of a suitable rubber, plastic or the like cushioning material. Similar buffer elements 45 are mounted on the guide block 14. Each of the cushioning elements 45 is in longitudinal opposed relationship to one of the aforementioned cushioning elements 44. Hence, we have two sets of cushioning elements in each of which one is on the frame structure and the other mounted on the guide. Each of the sets of cushioning elements are in confronting relationship so that one resilient buffer element of each set of elements will contact another in both buff and draft extended positions.

The aforementioned flanges and buffer elements serve to restrict the longitudinal movement of the block 14 and to further dampen impact forces applied against the draw bar at spaced longitudinal points. It has been found, where the impact is extraordinary in character, that in order to preclude the draw bar 10 and one of the pistons 29—29' from being driven through the cylinder wall 38 or from being pulled through the cylinder wall 40, additional so-called emergency stop means as above described should be provided.

Thus, the cylinders 24 and 25 including their respective pistons provide ample dampening for the ordinary longitudinal impact forces. However, since there is an ever present possibility that the impact will be too great to be fully handled by the cylinder dampening means, the aforesaid emergency cushioning buffer elements have been employed as a safety measure so as to preclude heavy damage to the gear 9.

In Figure 4, a modified form of automatic metering flow control valve 45 is shown mounted on the dividing member or wall 26'. The valve 45 has as its component parts a metering pin 46 which is adapted to rest in the valve seat 47 when in normal position; compression spring means 48 which is normally adapted to hold the pin 46 in a seated position; and a plug seal 49 insertable within the bore of the valve seat and press fitted therein.

By virtue of the use of a valve of this type, when heavy impact forces are applied through one of the piston rods 29, 29', the pin 46 may be progressively urged radially outwardly into the bore against the radially inward force of the spring means 48. The valve will assist in giving the desired cushioning effect by reason that it is particularly adapted to cope with wide variations of impact force transmitted through the piston rod to the piston. This valve will self-adjust in accordance with the force of impact and the corresponding fluid pressure exerted through the passageway 50. It will be perceived from the drawings that the flow control means provided in the form of a valve 45 dampens both buff and draft impact forces. By virtue of employing the instant flow control valve 45 it is not necessary to utilize separate valves on each of the respective pistons 29, 29'; one valve will in this manner accomplish the work of the two valves shown in the first form of the invention. Thus by employing the instant modifications only one setting of the valve is needed to adjust same as opposed to the other form where two settings are required. The construction and operation of this modified form (as shown in Figure 4) is otherwise the same as that employed in the other form (Figure 1).

Thus it will now be appreciated that I have provided a novel draft gear construction which more efficiently dampens impact forces. In addition, by virtue of my novel arrangement of elements, the instant draft gear assembly is capable of being utilized in the standard draft gear pocket thereby embodying space saving characteristics.

In Figures 5 and 6 a still further modified form of my invention is shown. This form of my invention is very similar to that shown in Figure 4 but includes a modified valve arrangement 51 (Fig. 6). In this form of my invention one of the metering devices 33—33' is suitably carried by one of the respective pistons 29—29' while the relief valves 34—34' have been omitted.

In the modified form of my invention (Figs. 5 and 6) each of the reservoirs 36—36 has a pair of ducts 52—53 and 54—55 connecting same to the respective cylinders 24 and 25. Each of the aforementioned ducts is connected to the respective cylinders 24 and 25 adjacent the opposed longitudinal ends of the cylinders 24 and 25.

Housed within each of the above ducts is a check valve 56 which is of a uni-directional flow type. The valves 56 are each of an identical construction comprising a spring 57 secured to the wall of the duct which bears upon a ball 58 and is adapted to move from the seat 59 provided therefor in response to fluid pressure and in that manner open and close the respective ducts.

It will be noted, however, that the valves 56 contained in the ducts communicating the respective reservoirs to the respective cylinders 24 and 25 work in opposite directions. Referring to cylinder 24, as the piston 29 dampens an in buff impact force the uni-directional valve 56 contained in the duct 53 closes with the displaced fluid progressively dampened by metering device 33. As the fluid flows through the metering device 33 on the moving piston 29 to dampen an in buff impact the piston rod 13 is displacing fluid through valve 56 in duct 52. Then as the piston 29 returns to its normal position fluid is drawn from the reservoir 36 through duct 53 and the valve 56 therein into the cylinder 24. The piston 29' works in the same general manner when dampening in draft impact forces since duct 54 houses a valve 56 which is of the same construction as the valve in duct 53 while the valve 56 in duct 55 corresponds to the valve 56 in duct 52. It will be appreciated that it is in this manner that the displaced fluid is returned to its proper position with relation to the pistons 29—29' thereby permitting both buff and draft impact forces to be dampened in the direction of the cylindrical wall 26'. It is in this manner that the leakage about the shaft seals 30—30' is minimized since each of the pistons dampen impact forces in a direction towards the dividing member 26' which is positioned interiorly of the respective chambers.

In all forms of my invention it will also now be perceived that the instant draft gear construction suitably utilizes a spring to urge the draw bar forward and ready for an in buff impact at all times. The present draft gear construction is highly advantageous since the piston rod 13 and the piston 29 may be maintained in such a position as to be capable of dampening impact the full length of the cylinder 24.

It will be understood that modifications and variations may be effected without departing from the scope of the novel concepts of the present invention.

I claimed as my invention:

1. In a railroad car draft gear, hitching means having a pivotal draw bar, a supporting frame structure in which an end of said bar is disposed, a guide slidably supported by said frame structure, said guide being connected to said pivotal draw bar, dampening means connected to said guide for resisting longitudinal sliding movement of said guide relative to said frame structure, a first set of buffer elements with one of the elements being secured on each of the opposite longitudinal sides of said guide and a second set of resilient buffer elements each of

which is secured to the frame structure at opposite ends of the longitudinal path of travel of said guide.

2. In a railroad car draft gear, hitching means having a pivotal draw bar, a supporting frame structure in which an end of said bar is disposed, a guide slidably supported by said frame structure, said guide being connected to said pivotal draw bar, dampening means connected to said guide for resisting longitudinal sliding movement of said guide relative to said frame structure, a first set of buffer elements with one of the elements being secured on each of the opposite longitudinal sides of said guide and a second set of resilient buffer elements each of which is secured to the frame structure at opposite ends of the longitudinal path of travel of said guide, said sets of resilient buffer elements being in confronting relationship so that at least one resilient buffer element of a set of elements will contact another in both buff and draft extended positions.

3. In a railroad car draft gear, hitching means having a pivotal draw bar, a supporting frame structure in which an end of said bar is disposed, a guide slidably supported by said frame structure, said guide being connected to said pivotal draw bar, and fluid dampening means connected to said guide for resisting longitudinal sliding movement of said guide relative to said frame structure, said dampening means including at least two dampening chambers separated by a dividing member, said dividing member having flow control means comprising a longitudinal passageway with a metering valve therein, said passageway connecting said chambers, each of said dampening chambers having a piston movable therein in response to impact force, connecting means connecting the pistons to the draw bar, one of said pistons dampening the impact force by way of said flow control means in buff and the other of said pistons dampening the impact force by way of said flow control means in draft.

4. In a railroad car draft gear, hitching means having a pivotal draw bar, a supporting frame structure in which an end of said bar is disposed, a guide slidably supported by said frame structure, said guide being connected to said pivotal draw bar, and fluid dampening means connected to said guide for resisting longitudinal sliding movement of said guide relative to said frame structure, said dampening means including a fluid chamber area divided into at least two dampening chambers separated by a dividing member, said dividing member having flow control means comprising a longitudinal passageway with a metering valve therein, said passageway connecting said chambers, each of said dampening chambers having a piston movable therein in response to impact force, connecting means connecting the pistons to the draw bar, one of said pistons dampening the impact force by way of said flow control means in buff and the other of said pistons dampening the impact force by way of said flow control means in draft, said flow control means comprising a single reversible valve and with the dividing member comprising a common end wall extending transversely between the pistons dividing the chamber area into said two dampening chambers.

5. In a railroad car draft gear, hitching means having a pivotal draw bar, a supporting frame structure in which an end of said bar is disposed, a guide slidably supported by said frame structure, said guide being connected to said pivotal draw bar, and fluid dampening means connected to said guide for resisting longtudinal sliding movement of said guide relative to said frame structure, said dampening means including at least two dampening chambers disposed in axially spaced relation with respect to one another and separated by a dividing member, said dividing member having flow control means connecting said chambers, each of said dampening chambers having a piston movable therein in response to impact force, connecting means connecting the pistons to the draw bar, one of said pistons dampening the impact force by way of said flow control means in buff and the other of said pistons dampening the impact force by way of said flow control means in draft, each piston including a relief valve which is open when the other piston is dampening impact force.

6. In a railroad car draft gear, hitching means having a pivotal draw bar, a supporting frame structure in which an end of said bar is disposed, a guide slidably supported by said frame structure, said guide being connected to said pivotal draw bar, fluid dampening means including at least two dampening chambers separated by a dividing member, each of said dampening chambers having a piston, one of said pistons connected to said guide by a longitudinally slidable yoke, said other piston being connected to said guide, said pistons being movable in said chamber in response to longitudinal impact force, one of said pistons serving to dampen the impact force in buff and the other of said pistons serving to dampen the impact in draft, and spring means bearing on said yoke for returning the draw bar to a forward position after an application of an impact force.

7. In a railroad car draft gear, hitching means having a pivotal draw bar, a supporting frame structure in which an end of said bar is disposed, a guide slidably supported by said frame structure, said guide being connected to said pivotal draw bar, fluid dampening means including at least two dampening chambers separated by a dividing member, each of said dampening chambers having a piston, one of said pistons connected to said guide by a longitudinally slidable yoke, said other piston being connected to said guide, said pistons being movable in said chamber in response to longitudinal impact force, one of said pistons serving to dampen the impact force in buff and the other of said pistons serving to dampen the impact in draft, and means connected to said draw bar for maintaining same in a forward position ready for buff impact.

8. In a railroad car draft gear, hitching means having a pivotal draw bar, a supporting frame structure in which an end of said bar is disposed, a guide slidably supported by said frame structure, said guide being connected to said pivotal draw bar, and fluid dampening means connected to said guide for resisting longitudinal sliding movement of said guide relative to said frame structure, said dampening means including at least two dampening chambers separated by a dividing member, each of said dampening chambers having a piston, said pistons being movable in said chambers in response to impact force, one of said pistons serving to dampen the impact force in buff and the other of said pistons serving to dampen the impact force in draft, each of said pistons having flow control means responsive to opposite thrusts exerted through the pistons toward said dividing member in draft and buff thrust stages relieving the pressure on the longitudinally opposed remote ends of said dampening chambers, each of said dampening chambers having valve means to drain away the excess fluid as the piston is moved toward said dividing member and return the liquid as the piston is returned to normal position in readiness for impact.

9. In a dampening mechanism for a railroad car draft gear having a draw bar, the improvement of dampening means connected to said draw bar including two fluid containing dampening chambers separated by a dividing member, each of said chambers having a piston which is movable in said chamber in response to force, connecting means connecting said pistons to said draw bar one of said pistons serving to dampen the impact force in buff and the other of said pistons serving to dampen the impact force in draft, and flow control means connected with each of said chambers to dampen the thrust of the pistons in response to both buff and draft impact, each of said dampening chambers having valve means to drain away the excess fluid as the piston is extended toward said dividing member and return the liquid as the piston is returned to normal position in readiness for impact.

10. In a dampening mechanism for a railroad car draft gear having a draw bar connected to dampening means which includes two dampening chambers separated by a dividing member with the dampening chambers each having a piston provided with flow control means therein, connecting means connecting said pistons to said draw bar, one of said pistons serving to dampen a buff impact force and the other of said pistons serving to dampen a draft impact force, the improvement of means connected to each of said dampening chambers to return fluid from one side of the piston to the other side of same in position for dampening, said means including a fluid reservoir connected to each of said dampening chambers on the longitudinally opposite ends of the respective chambers and valve means cooperating with the reservoirs permitting the return of displaced fluid from one side of the piston to the other side in response to the pistons return to normal position in readiness for an impact force.

11. In a railroad car draft gear, a supporting frame structure including longitudinally spaced stops, hitching means including a draw bar, a guide connected to said draw bar and slidably supported by said frame structure between said stops, buffer elements between said guide and said stops to cushion impact forces at opposite ends of the longitudinal path of travel of said guide, fluid dampening means including at least two dampening chambers separated by a dividing member, each of said dampening chambers having a piston, one of said pistons being connected to said guide by a longitudinally slidable yoke, said other piston being connected to said guide, said pistons being movable in said chamber in response to longitudinal impact force, one of said pistons serving to dampen the impact force in buff and the other of said pistons serving to dampen the impact in draft, and draw bar return means supported by said frame structure positioned outside of said cylinders connected to said draw bar and permitting said pistons to travel substantially the full length of said cylinders to dampen impact forces without interference.

12. In a railroad car draft gear structure including hitching structure, draw bar structure on the gear structure, frame structure bearing the draw bar structure, buff and draft shock dampening means for dampening both buff and draft impact to the gear structure having axially related dampening cylinder structure having chambers each having a piston movable therein, connecting means connecting said pistons to said draw bar structure with one of the pistons dampening buff impact forces applied to the draw bar structure and with another of the pistons dampening draft impact forces applied to the draw bar structure.

13. In a railroad car draft gear, hitching means having a pivotal draw bar, a supporting frame structure in which an end of said bar is disposed, a guide slidably supported by said frame structure, said guide being connected to said pivotal draw bar, and fluid dampening means connected to said guide for resisting longitudinal sliding movement of said guide relative to said frame structure, said dampening means including at least two dampening chambers separated by a dividing member, each of said dampening chambers having a piston, said pistons being movable in said dampening chambers in response to impact force, connecting means connecting the pistons to the draw bar, one of said pistons serving to dampen the impact force in buff and the other of said pistons serving to dampen the impact force in draft, each of said pistons having flow control means responsive to opposite thrusts exerted through the pistons towards said dividing member in draft and buff thrust stages relieving the pressure on the longitudinally opposed remote ends of said dampening chambers, said flow control means on each piston including a relief valve which is open when the other piston is dampening impact force and means connected to said pistons normally maintaining them in axially spaced relation relative to the dividing member in readiness for dampening impact forces.

14. In a railroad car draft gear, hitching means having a pivotal draw bar, a supporting frame structure in which an end of said bar is disposed, a guide slidably supported by said frame structure, said guide being connected to said pivotal draw bar, and fluid dampening means connected to said guide for resisting longitudinal sliding movement of said guide relative to said frame structure, said dampening means including at least two dampening chambers separated by a dividing member, each of said dampening chambers having a piston with said pistons disposed in axially spaced relation, said piston being movable in said chamber in response to impact force, connecting means connecting the piston to the draw bar, one of said pistons serving to dampen the impact force in buff and the other of said pistons serving to dampen the impact force in draft, each of said pistons having flow control means responsive to opposite thrusts exerted through the pistons toward said dividing member in draft and buff stages relieving the pressure on the longitudinally opposed remote ends of said dampening chambers, each of said dampening chambers having means to drain away the excess fluid as the piston is extended into the chamber including fluid reservoirs.

15. In a railroad car draft gear, hitching means having a pivotal draw bar, a supporting frame structure in which an end of said bar is disposed, a guide slidably supported by said frame structure, said guide being connected at one guide end to said pivotal draw bar, and fluid dampening means connected to said guide at another and opposite guide end for resisting longitudinal sliding movement of said guide relative to said frame structure, said dampening means including at least two dampening chambers separated by a dividing member, said dividing member having flow control means cooperable with said chambers in the dampening of both buff forces, each of said dampening chambers having a piston movable therein in response to impact force, connecting means connecting the pistons to the draw bar, one of said pistons dampening the impact force by way of said flow control means in buff and the other of said pistons dampening the impact force by way of said flow control means in draft, each of said dampening chambers having means to drain away the excess fluid as the piston is extended into the chamber including fluid reservoirs.

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