Feb. 13, 1934. D. S. BARROWS 1,946,476

CUSHIONING MECHANISM

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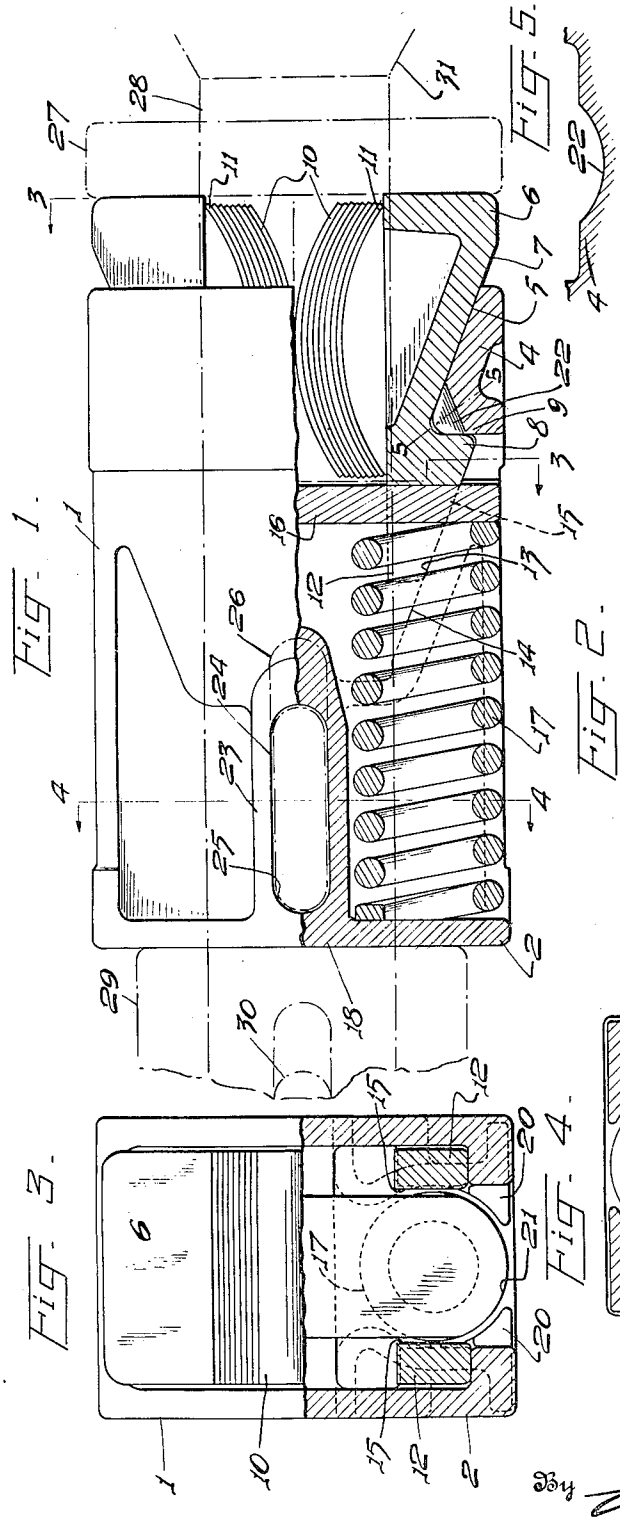

Fig. 1.

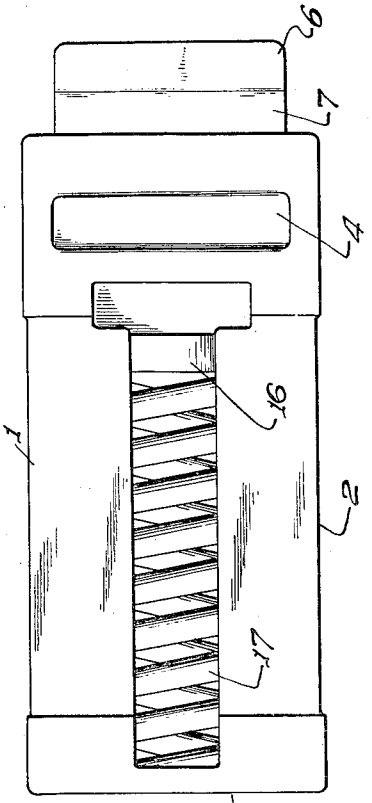

Fig. 2.

Fig. 3.

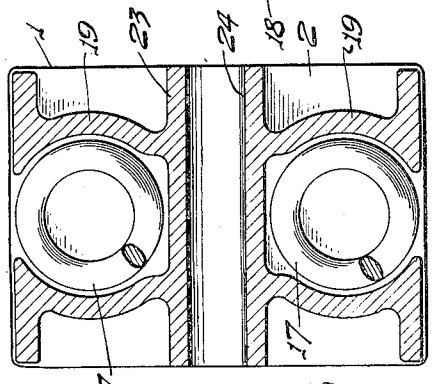

Fig. 4.

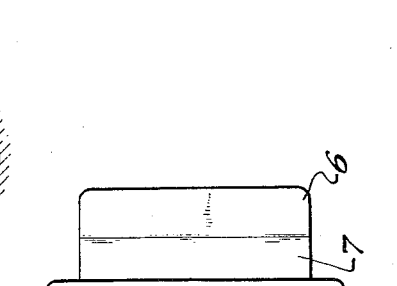

Fig. 5.

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CUSHIONING MECHANISM

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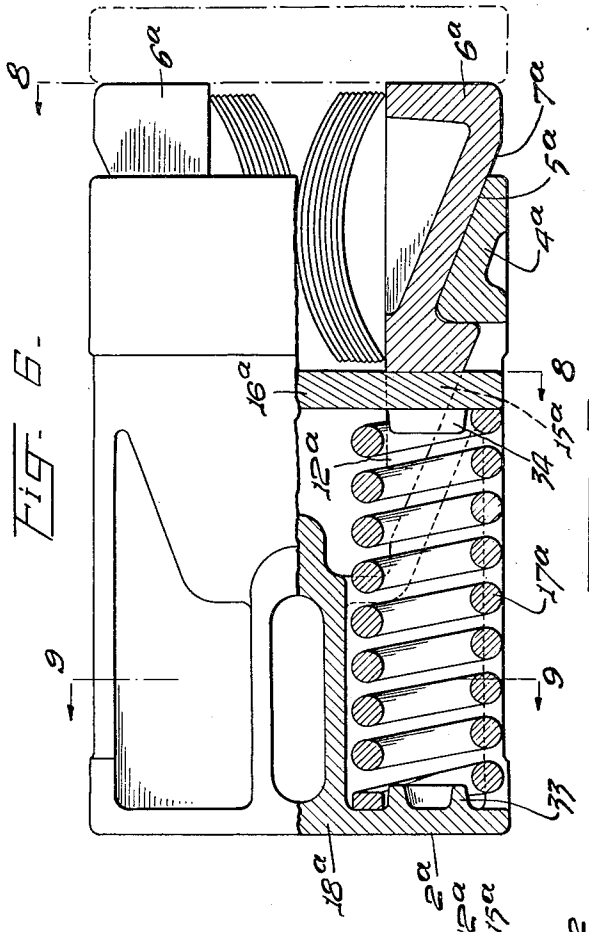

Fig. 6.

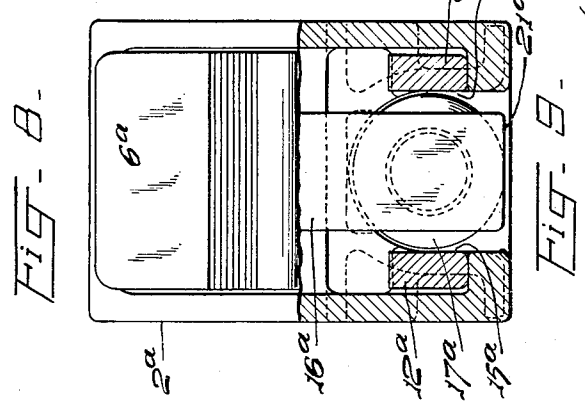

Fig. 8.

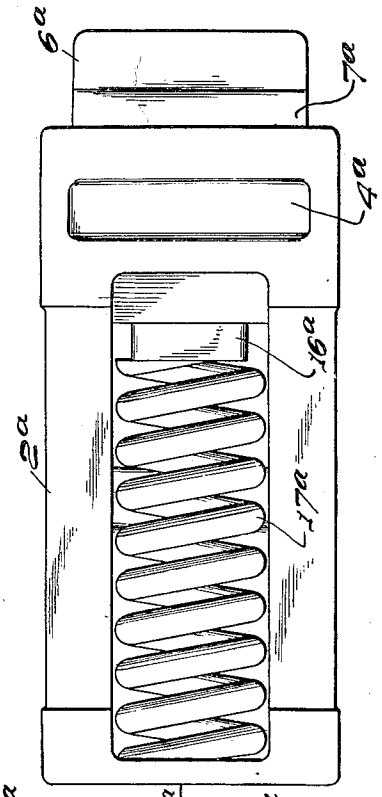

Fig. 7.

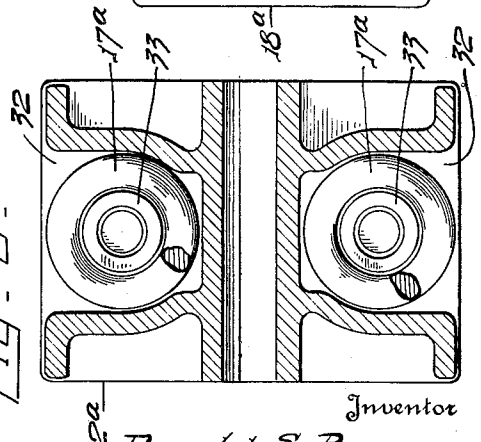

Fig. 9.

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Patented Feb. 13, 1934

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UNITED STATES PATENT OFFICE

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CUSHIONING MECHANISM

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Application December 23, 1929
Serial No. 416,114

10 Claims. (Cl. 213—30)

This invention relates to draft rigging and more particularly to spring and friction draft gears particularly adapted for use on railway vehicles.

The principal object of my invention, generally considered, is to provide friction draft gears or cushioning mechanism especially adapted for railway service and formed with housing or casings so slotted that they are adapted to serve the double purpose of housing the mechanism and functioning as front followers, whereby the mechanism is adapted to take the place of a draft gear of standard size and a front follower.

Another object of my invention is to provide cushioning mechanism involving an enclosing barrel or housing divided by a partition into two compartments with release springs in each compartment, said springs engaging an intermediate follower, which in turn fits notches in the inner ends of friction wedges urged apart by curved leaf springs and engaging inclined friction surfaces on the open end of the housing.

A further object of my invention is to provide a draft gear of standard size with a slotted housing, whereby it is adapted to function as a draft gear and associated front follower, said gear being thereby adapted for use with standard cheek plates and a yoke shorter than standard by an amount corresponding to the length of the standard follower and with a backstop with a projection corresponding to said follower length, or with a filler of corresponding length, or between draft sills in which the backstop is spaced a corresponding distance forward.

A still further object of my invention is to provide cushioning mechanism involving a casing or housing with outwardly flaring friction surfaces and friction wedges with inclined surfaces engaging said friction surfaces and urged apart by curved leaf springs, said wedges having slots between inwardly extending tails thereof and an interior follower plate of less width than said wedges passing through said slots and normally engaged by release springs, the tails of said wedges on either side of said plate being extended longitudinally of the gear to provide adequate bearing surface against the housing on either side of said interior follower, those portions of the housing providing the inclined friction surfaces having segmental notches for insertion and removal of the release springs.

An additional object of my invention is to provide cushioning mechanism involving an enclosing barrel or casing with inclined friction surfaces normally engaged by wedges urged apart by curved plate springs and with their inner ends engaging an intermediate follower, release springs disposed between said intermediate follower and the closed end of the housing, insertible through the sides of the housing, and held in place by bosses on the inner surface of the end wall of the housing and the adjacent surface of the intermediate follower.

Other objects and advantages of the invention relating to the particular arrangement and construction of the various parts will become apparent as the description proceeds.

Referring to the drawings illustrating my invention, the scope whereof is defined by the appended claims:

Figure 1 is a partial side elevation and partial vertical longitudinal sectional view of a form of draft gear or cushioning mechanism embodying my invention, the associated coupler, yoke, backstop, rear follower, and connecting key being diagrammatically illustrated.

Figure 2 is a plan view of the gear shown in Figure 1.

Figure 3 is a partial end elevation and partial transverse sectional view on the line 3—3 of Figure 1, looking in the direction of the arrows.

Figure 4 is a transverse sectional view of the gear on the line 4—4 of Figure 1, looking in the direction of the arrows.

Figure 5 is a fragmentary sectional view on the line 5—5 of Figure 1.

Figure 6 is a partial side elevation and partial vertical longitudinal sectional view of a gear, and associated rear follower diagrammatically illustrated, showing another embodiment of my invention.

Figure 7 is a plan of the gear shown in Figure 6.

Figure 8 is a partial end elevation and partial transverse sectional view on the line 8—8 of Figure 6, looking in the direction of the arrows.

Figure 9 is a transverse sectional view on the line 9—9 of Figure 6, looking in the direction of the arrows.

Referring to the drawings in detail, like parts being designated by like reference characters, and first considering the embodiment of my invention illustrated in Figures 1 to 5 inclusive, there is shown a draft gear or cushioning mechanism 1 particularly adapted for use as a friction draft gear for railway vehicles and preferably designed so that it will fit into a draft gear pocket of usual size. In the embodiment shown it is of a length corresponding with that of a standard size draft gear, so that it is receivable between sills normally

spaced and adapted to interchange with an ordinary form of draft gear.

In the embodiment shown the gear comprises a spring barrel or housing 2 with one end closed and the other end formed with outwardly flaring walls 4 providing inclined friction surfaces 5. Received between said walls 4 are wedge blocks 6 formed with correspondingly inclined friction surfaces 7 normally engaging the friction surfaces 5 on the housing or casing 2. In order to interlock the wedge blocks 6 with the housing, the same are formed with inner shouldered portions 8 which engage corresponding shouldered portions 9 at the ends of the inclined surfaces 5 on the housing, thereby preventing undesired withdrawal of said wedge blocks. Disposed between said wedge blocks 6 for urging them apart and into engagement with the inclined friction surfaces on the housing are two sets of curved plate or leaf springs 10, each set of which has its concave side preferably disposed toward the corresponding wedge block so that the ends 11 thereof engage said wedge blocks and urge them into frictional engagement with the inclined portions on the housing.

The inner ends of the wedge blocks 6 are bifurcated to provide inwardly extending tails 12 having inclined friction surfaces 13 engaging correspondingly inclined friction surfaces 14 on the housing 2, and as illustrated particularly in Figure 1, preferably offset from the inclined friction surfaces 5, but extending at a corresponding inclination. The tails 12 of the wedge blocks provide notches 15 therebetween receiving an intermediate follower 16 of less width than the normal width of said wedge blocks, as shown most clearly in Figure 3, said follower engaging the wedge blocks on one side and preferably helical release springs 17 on the other side disposed between said follower and the end wall 18 of the housing. The intermediate follower 16 and the associated release springs 17 are guided by inwardly curving wall portions 19 partially surrounding the springs and with longitudinal extensions 20 properly positioning the follower 16, the ends of which are correspondingly curved, as indicated at 21. The release springs 17 perform the additional function of holding the intermediate follower 16 seated in the notched portions 15 of the wedges for maintaining the curved plate springs 10 in proper position. In order to facilitate insertion and removal of the springs 17, those portions of the housing 2 on which are formed the inclined friction surfaces 5 are preferably provided with segmental notches 22.

In order to adapt the housing 2 to function as a front follower for use with standard Farlow two key draft rigging, the end thereof adjacent the wall 18 is preferably formed with a transverse normally horizontal partition 23 provided with a horizontal slot 24 adapted to receive the usual front follower key 25 for connection with associated sills (not shown), said key, as will be understood, being received in slots 26 in standard cheek plates (not shown) and/or draft sills (not shown) allowing for rearward movement of the housing for the compression of the mechanism, while holding said housing against forward movement so that the wedges may be forced thereinto by the associated rear follower 27 and yoke 28 through its connection with the associated coupler 29 connected to said yoke by the key 30. The outer edge portion of the partition is desirably beveled or tapered, as illustrated in Fig. 1, to cooperate with the notches 22 and facilitate insertion and removal of the springs 17. A fragmentary portion of the backstop 31 is illustrated and, as will be understood, is normally in engagement with the yoke 28.

Referring now to the embodiment of my invention illustrated in Figures 6 to 9 inclusive, a construction is there disclosed which is very similar to that of Figures 1 to 5 inclusive, except that the housing 2^a, which has inclined walls 4^a providing friction surfaces 5^a for engagement with corresponding surfaces 7^a on wedges 6^a, has the top and bottom walls cut away to provide openings 32 for receiving the release springs 17^a from the sides, or top and bottom, of the housing, said springs being held in place in the embodiment illustrated by lugs or spring plugs 33 on the inner side of the end wall 18^a and corresponding lugs 34 on the inner surface of the intermediate follower 16^a. Because of the ability to remove and reinsert the springs 17^a from the top and bottom of the housing, there is no necessity for notching the inclined wall portions 4^a thereof, as in the previous embodiment. In the present embodiment, the intermediate follower 16^a has its ends rectangular rather than curved, as indicated at 21^a, said ends, as in the previous embodiment, being received between the tails 12^a of the wedges 6^a in the notches 15^a provided therebetween. Except as specifically described in connection with the present embodiment, the same may correspond substantially with that of the previous embodiment.

From the foregoing disclosure, it will be seen that I have devised a draft gear of standard size with a slotted housing adapted to take the place of a draft gear and associated front follower for use with Farlow attachments. The rear follower shown may be either plain, as illustrated, or interlocked with the wedge ends, as will be understood. The interior follower plate is of less width than the wedges and passes through rectangular slots between or in the tails of the wedges. On account of the extension of the wedge tails, an increased frictional bearing surface is provided between the wedges and housing. In one of the embodiments, the release springs are removed from the open end of the housing through segmental notches in the inclined walls thereof, while in another form, they are insertable from the outside and held in place by bosses on the end wall of the housing and inner face of the interior follower. On account of the combination front follower and housing employed, the gear is adapted for use with standard cheek plates and a yoke shorter than standard, by the length of the standard front follower, or eight inches. Assuming the follower length to be eight inches, the draft gear would be used with a backstop having an eight inch projection or with an eight inch filler between a normally spaced backstop and the yoke, or with the backstop spaced eight inches forwardly.

Although I have disclosed preferred embodiments of my invention, it will be understood that the same are illustrative and not limiting and that modifications may be made within the spirit and scope of my invention as defined by the appended claims.

Having now described my invention, I claim:

1. Cushioning mechanism adapted for use with railway draft rigging comprising a housing, a partition dividing said housing and disposed adjacent one end thereof, the other end of said housing being formed with outwardly flaring friction surfaces, wedges engaging said surfaces, resilient means disposed between said wedges, an intermediate follower engaging in notches in the

inner ends of said wedges, and resilient means disposed between said follower and the housing on opposite sides of said partition.

2. Cushioning mechanism adapted for use with railway draft rigging comprising a housing, one end of said housing being closed and the other end formed with outwardly flaring friction surfaces, wedges engaging said surfaces and formed with rectangular notches adjacent the inner ends thereof, said wedges being extended on either side of said notches to provide auxiliary friction surfaces for engagement with corresponding surfaces on the housing, resilient means to hold said wedges in operative engagement with said friction surfaces, an intermediate follower received in the notches in said wedge plates, and release springs disposed between said follower and the closed end of said housing.

3. Cushioning mechanism adapted for use with railway draft rigging comprising a housing, a normally horizontal partition dividing said housing into upper and lower compartments, a release spring fitting in each compartment, the walls of said compartments being curved to embrace said springs and hold them in place, the other end of said housing having inwardly converging walls providing friction surfaces terminating in shouldered portions, said shouldered portions having segmental notches cut therein, and the outer end of said partition being tapered, for the insertion and removal of said springs.

4. Cushioning mechanism adapted for use with railway draft rigging comprising a housing, a partition dividing said housing into transversely disposed compartments and formed with a slot therethrough for receiving a draft key adapted to connect said housing to an associated car underframe, and a release spring fitting in each compartment, the walls of said compartment being curved to embrace said springs and hold them in place, the other end of said housing having inwardly converging walls providing friction surfaces terminating in shouldered portions, said shouldered portions having notches therein, and the adjacent end portion of said partition being tapered, for the insertion and removal of said springs.

5. Cushioning mechanism comprising a housing formed with outwardly flaring friction surfaces, wedges engaging said surfaces, resilient means disposed between said wedges for urging them into engagement with said surfaces, the inner portions of said wedges being bifurcated to provide notches, an intermediate follower received in said notches, and release springs normally engaging the inner surface of said follower.

6. Cushioning mechanism adapted for use with railway draft rigging comprising a housing, a partition dividing said housing into upper and lower compartments, said housing having outwardly flaring friction surfaces, wedges engaging said surfaces, resilient means disposed between said wedges, said wedges having their inner ends bifurcated to provide notches, an intermediate follower received in said notches, and resilient means normally acting on said follower to effect release of the mechanism, said means being received in the pockets provided by the partition, said partition being slotted for receiving a draft member.

7. Cushioning mechanism adapted for use with railway draft rigging comprising a housing having a pair of laterally spaced, longitudinally extending, walls, a transverse wall connecting said spaced walls, a partition extending longitudinally from said transverse wall and connecting said spaced walls, wall portions beyond said partition connecting corresponding side edge portions of said spaced walls, presenting spaced inwardly converging friction surfaces and, in combination with the transverse wall and partition, serving to tie together said spaced walls, leaving outwardly opening pockets between said transverse wall and the friction surfaces, and on opposite sides of said partition, said partition having a slot therethrough adapted to receive a connecting draft key, with slotted portions thereof extending laterally beyond the outer surfaces of said spaced walls to increase the key bearing area, wedge plates with friction faces engaging the friction surfaces on the housing, resilient means disposed between said plates, and release springs disposed in said pockets, engaging said transverse wall, and acting on said wedge plates for effecting release of the mechanism.

8. A housing for cushioning mechanism formed with a pair of laterally spaced longitudinally extending walls connected by a transverse wall and a partition extending longitudinally from said transverse wall, wall portions beyond said partition connecting corresponding side edge portions of said spaced walls to further rigidify the construction and formed with inwardly diverging friction surfaces, leaving outwardly opening pockets between said transverse wall and the wall portions and on opposite sides of said partition, said pockets being adapted to receive release springs, and said partition terminating short of said wall portions to allow for the reception and longitudinal movement of a follower engaged by the springs in said pockets and having a slot therethrough adapted to receive a connecting draft key.

9. Cushioning mechanism adapted for use with railway draft rigging comprising a housing having an open end formed with outwardly diverging friction surfaces, wedges engaging said surfaces and having inner end portions bifurcated and extended inwardly on either side of said housing to provide auxiliary friction surfaces normally engaging corresponding surfaces on said housing, resilient means normally holding said wedges in operative engagement with said friction surfaces, and release springs acting on said wedges between the bifurcated portions thereof.

10. Cushioning mechanism adapted for use with railway draft rigging comprising a housing having an open end provided with relatively fixed inwardly converging friction surfaces, friction wedges with faces engaging the friction surfaces of the housing and movable thereinto, curved leaf springs disposed between said wedges to urge them into engagement with said friction surfaces, the inner ends of said wedges being notched, an intermediate follower seated in said notched portions, and release springs engaging said follower and holding it in contact with said wedges for maintaining the associated springs in proper position.

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