Oct. 24, 1933. D. S. BARROWS 1,931,480

CUSHIONING MECHANISM

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Fig. 1.

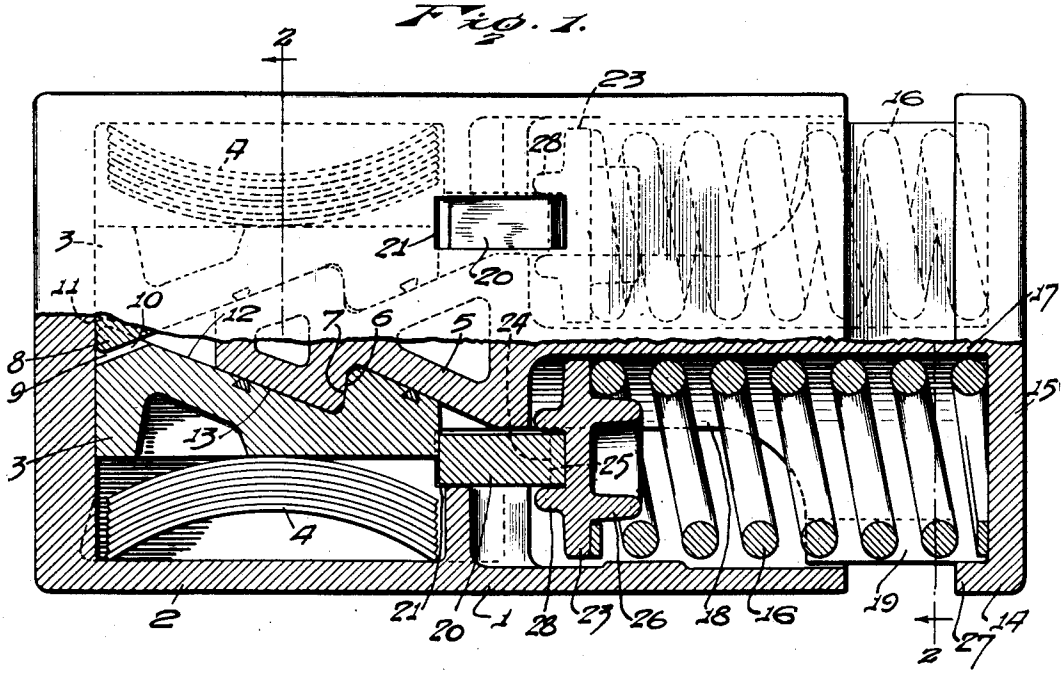


Fig. 2.

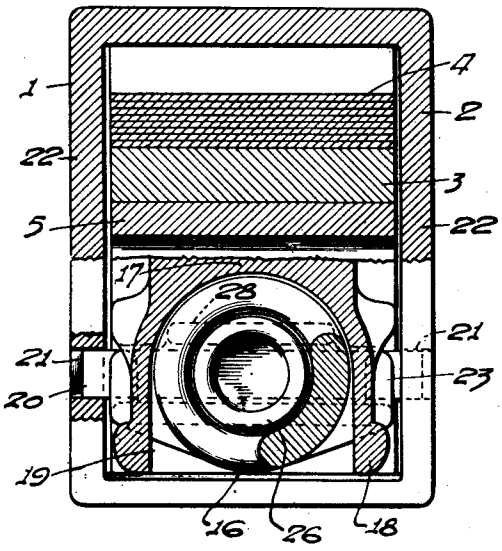
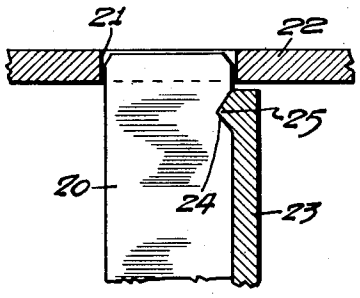


Fig. 3.



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CUSHIONING MECHANISM

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8 Claims. (Cl. 213—30)

This invention relates to cushioning mechanism and, more particularly, to such adapted to function as draft gears for railway vehicles.

The principal object of my invention, generally considered, is to provide a fully enclosed draft gear which preferably involves a housing containing spring-actuated wedges and a follower, spring cage, or cooperating housing with a preferably integral wedge extension frictionally engaging the wedges in the first housing and interlocked with respect thereto by means of cooperating shouldered portions on the parts, said cage enclosing springs for effecting release of the mechanism, means preferably being provided for preventing undesired withdrawal of the wedges from the housing.

Another object of my invention is to provide cushioning mechanism adapted to function as a draft gear for railway vehicles and preferably involving cooperating housings which together entirely enclose the mechanism, one of said housings containing friction wedges spring-pressed toward one another, and the other housing preferably having integral wedge extensions cooperating with said spring-pressed wedges.

A further object of my invention is the provision of friction draft gear involving cooperating housings or followers which contain the springs and friction elements, the gear being so formed that the cooperating housings may be interlocked with one another after placing the enclosed parts in position by merely pressing them together until a central wedge portion snaps into interlocked relation with associated friction wedges.

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 drawing 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 cushioning mechanism embodying my invention.

Fig. 2 is a transverse, sectional view on the line 2—2 of Fig. 1, looking in the direction of the arrows.

Fig. 3 is a fragmentary, horizontal sectional view illustrating the manner in which the retaining keys interlock with spring caps to prevent disarrangement of the parts.

Referring to the drawing in detail, like parts being designated by like reference characters, there is shown a cushioning mechanism or draft gear 1 comprising a housing or friction casing 2 which normally encloses a pair of friction wedges or wedge blocks 3. Resilient means, preferably taking the form of curved plate springs 4, are desirably provided for urging the wedges 3 toward one another and into engagement with the central cooperating wedge member or portion 5, and disposed in inwardly opening pockets defined by the housing end wall and transverse flanges extending inwardly from the side walls, and disposed intermediate the ends of said housing. The wedges 3 and the wedge portion 5 are preferably formed with normally engaging shoulders 6 and 7, respectively, to prevent undesired withdrawal of the wedge extension 5 from engagement with the wedges 3. In order to economize space, the wedges 3 preferably overlap to some extent, that is, a portion 8 of one wedge may be extended to fit in a correspondingly notched portion 9 in the other wedge, and the portions 10 of the second-mentioned wedge on either side of the notched portion 9 desirably extend in the correspondingly notched portions 11 of the first-mentioned wedge, as shown most clearly in Figure 1. In this way, the wedges 3 may be disposed relatively close together, while the friction surfaces 12 thereof and the corresponding friction surfaces 13 on the central wedge portion 5 may be disposed at the desired angle.

Cooperating with the housing 2 is a follower, spring cage or associated housing 14 provided with a transverse web or wall 15, forming the follower portion for associated release springs 16, and a longitudinal partition 17, on either side of which are disposed the releasing means which, in the present embodiment, take the form of coil or helical springs 16. The partition portion 17 desirably extends into the housing 2 and is integrally connected with the outer end of the wedge portion 5, the connection being further reinforced by extending the partition 17 partially around the springs 16, as indicated at 18, and increasing the enclosure of said springs, so that where the partition portions 18 extend out of the housing 2, each spring is enclosed on all but one side, which thereby provides for inspection of the springs through the apertures 19.

In order to prevent undesired removal of the wedges 3 from the housing 2, due to action of the release springs 16, or any other cause, stop means, preferably taking the form of keys 20, are desirably provided which pass through corresponding slots 21 in the side walls 22 of the housing 2 and normally engage the outer ends of the wedges 3, the outer surfaces of said keys being,

in turn, engaged by spring caps or seats 23. The keys 20 also preferably serve to hold the release springs under the desired initial tension and are prevented from undesired removal by preferably interlocking with the spring seats 23 in any desired manner, as by being notched at 24, and receiving corresponding projections 25 from the spring seats 23 in said notches, as shown most clearly in Figure 3.

The release springs 16 are preferably held in proper alignment by fitting over collars 26 on the seats and being surrounded by the partition portions 19 of the spring cage 14 and the overlying flange portions 27 on the spring follower portion 15. The spring seat members 23 are desirably disposed in proper relation with respect to the keys 20 by having flanges or ribs 28 disposed in embraced relationship with the outer edges of said keys.

From the foregoing disclosure, it will be seen that I have devised a substantially fully enclosed friction draft gear or cushioning device involving a housing containing spring-pressed wedges, with their large ends normally in frictional engagement with the end wall of the housing, and a follower, spring cage or cooperating housing, normally telescoping with the first-mentioned housing, with a preferably integral extension providing a central cooperating wedge and enclosing the release springs, said wedge desirably interlocking with the wedges in the housing and keys, normally disposed in frictional engagement with the small ends of the wedges, being provided for preventing undesired withdrawal of said wedges and holding the release springs under initial compression, if desired.

The follower portion 15 of the device 14 is preferably so constructed that upon complete closure of the gear the flanges 27 engage the adjacent end of the housing 2. It will be clear that the gear may be assembled by placing the wedges, plate springs and keys in place in the housing 2, positioning the release springs and spring seats in the spring cage or plunger pockets in the cooperating device 14 and forcing the parts together, as in a hydraulic press, until the spear head extension or central wedge snaps into interlocking engagement between the wedges 3 in the position shown in Figure 1. An alternative method of assembly involves interlocking the wedges 3 with the spear head or central wedge portion 5 and sliding the spring cage or plunger 14 with the release springs and seats into the housing 2, forcing the wedges 3 and associated wedge portion 5 between the leaf springs 4, and then driving the transverse keys 20 into place. To disassemble the gear, it will be necessary to drive out the keys 20. The notches 24 in the keys 20 which serve to interlock the spring seats with respect thereto should be considered as merely illustrative and not limiting.

I have shown the cushioning mechanism or draft gear disposed with its narrow sides as upper and lower walls, as it would be if used with a horizontal yoke. It will be understood, however, that I may use my gear with the wide sides as the upper and lower walls, as when used with a vertical yoke, and either end may be disposed toward the associated coupler or drawbar of the railway vehicle, as desired.

Although a preferred embodiment of my invention has been illustrated, it will be understood that modifications may be made within the spirit and scope of the appended claims.

I claim:—

1. Cushioning mechanism comprising a housing, wedges disposed therein and presenting outwardly diverging friction surfaces, resilient means urging said wedges toward one another, a follower formed with an extension normally fitting between said wedges and provided with corresponding friction surfaces in engagement with the friction surfaces thereof, and removable stop means intersecting side walls of said housing and engaging said wedges to prevent undesired withdrawal of the latter.

2. Cushioning mechanism comprising a housing formed with side walls, an end wall and transverse flanges extending inwardly from the side walls and forming inwardly opening pockets, friction wedges disposed in said housing and presenting outwardly diverging friction surfaces, resilient means disposed in said pockets and urging said wedges toward one another, a follower formed with an extension normally fitting between said wedges and provided with corresponding friction surfaces in engagement with the friction surfaces thereof, said wedges and extension being provided with normally engaging shoulders for preventing undesired withdrawal of the extension from engagement with said wedges, and stop means cooperating with said housing to prevent undesired withdrawal of said wedges.

3. Cushioning mechanism comprising a housing, wedges received therein and presenting outwardly diverging friction surfaces, curved plate springs disposed between the wedges and adjacent walls of the housing for urging said wedges toward one another, a follower provided with an extension normally fitting between said wedges and having corresponding friction surfaces in engagement with the friction surfaces thereof, and keys intersecting the side walls of said housing and normally engaging the outer ends of said wedges for preventing outward displacement thereof.

4. Cushioning mechanism comprising a housing, wedges disposed therein and presenting outwardly diverging friction surfaces, resilient means urging said wedges toward one another, a spring cage provided with a central extension normally fitting between said wedges and formed with corresponding friction surfaces in engagement with the friction surfaces thereof, means cooperating with said housing to prevent undesired withdrawal of said wedges, and release springs disposed in said cage and acting on said last-mentioned means to effect release of the mechanism.

5. Cushioning mechanism comprising a housing, wedges received therein and frictionally engaging a transverse wall thereof, curved plate springs disposed between the wedges and adjacent walls of the housing for urging said wedges toward one another, a follower provided with an extension normally fitting between said wedges and having corresponding friction surfaces in engagement with the friction surfaces thereof, keys intersecting the side walls of said housing and normally frictionally engaging the adjacent ends of said wedges and preventing outward displacement thereof, release springs disposed between said housing and follower, and spring caps disposed between said keys and the adjacent ends of said release springs.

6. Cushioning mechanism comprising a housing, wedges received therein and presenting outwardly diverging frictional surfaces, resilient means urging said wedges toward one another, a cooperating housing normally telescoping with the first housing and formed with a wedge-shaped

portion normally fitting between the wedges in the first housing and provided with corresponding friction surfaces in engagement with the friction surfaces thereof, and removable means intersecting the first housing and engaging the wedges to prevent undesired withdrawal of the latter.

7. Cushioning mechanism comprising a housing, a pair of friction wedges disposed therein and presenting outwardly diverging friction surfaces, resilient means urging said wedges toward one another, a housing telescoping with the first-mentioned housing and formed with a wedge-shaped extension normally fitting between said wedges and provided with corresponding friction surfaces in engagement with the friction surfaces thereof, said wedges and extension having normally engaging shoulders for preventing undesired withdrawal of the second housing from the first-mentioned housing, and means cooperating with said first-mentioned housing to prevent undesired withdrawal of the contained wedges.

8. Cushioning mechanism comprising a housing, a pair of friction wedges disposed therein and presenting outwardly diverging friction surfaces, the large ends of said wedges normally engaging a transverse wall of the housing, a resilient means for urging said wedges toward one another, a second housing provided with a central extension normally fitting between said wedges and having corresponding friction surfaces in engagement with the friction surfaces thereof, said second housing having side walls normally telescoping with the side walls of the first housing and a follower portion adapted to abut the ends of the first housing side walls upon complete closure of the gear, means cooperating with the first housing to prevent undesired withdrawal of the enclosed wedges, and release springs disposed in the second housing and acting on said last-mentioned means to effect release of the mechanism.

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