May 4, 1943. T. F. DWYER, JR., ET AL 2,318,472

DRAFT APPLIANCE

Filed March 20, 1941

Fig. 1.

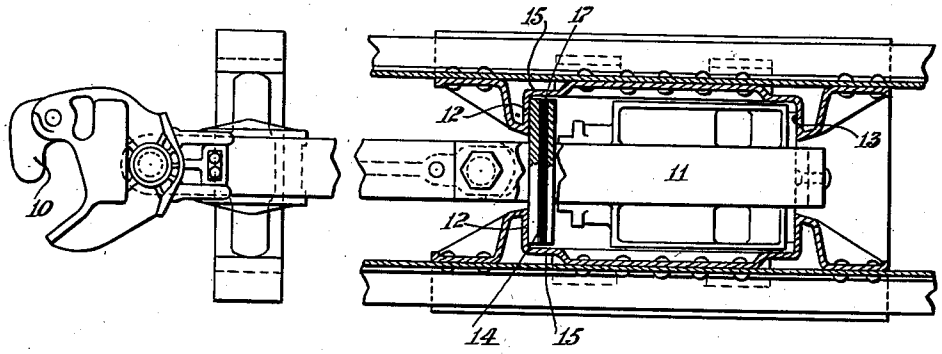


Fig. 2.

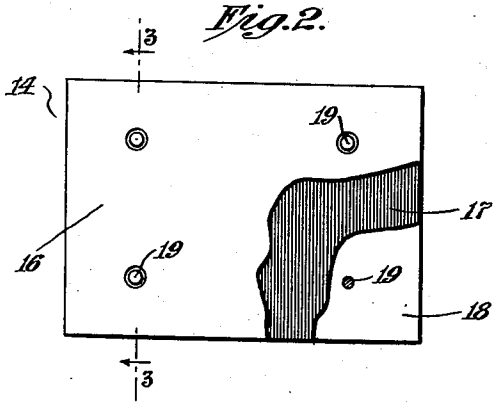


Fig. 3.

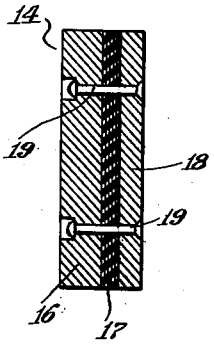


Fig. 4.

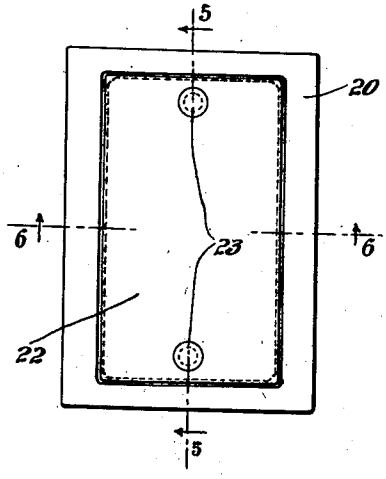


Fig. 5.

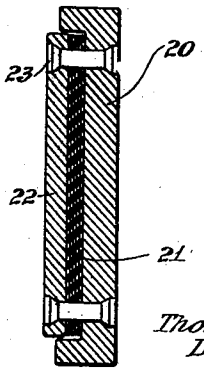
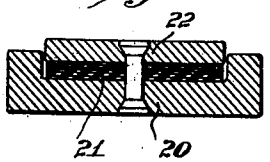


Fig. 6.



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DRAFT APPLIANCE

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Application March 20, 1941, Serial No. 384,258

3 Claims. (Cl. 213—40)

This invention relates to railroad draft gear and has for an object to provide a cushioning device between one or both abutments for taking draft and buffing thrusts of the draft yoke and coupler.

Another object is to provide a draft gear better able to withstand the shocks incident to present day conditions in high speed and braking.

A further object is to provide such a device in which the play or movement longitudinally of the train is a minimum, whereby the slack may be eliminated in a train as rapidly as possible.

Referring to the drawing

Fig. 1 shows one embodiment of this invention located in place to take the draft shocks.

Fig. 2 is a top plan view partly in section of a device for absorbing shocks.

Fig. 3 is a section on the line 3—3 of Fig. 2.

Fig. 4 is a top plan view of another embodiment of this invention for the same purpose as that in Fig. 2.

Fig. 5 is a section on the line 5—5 of Fig. 4.

Fig. 6 is a section on the line 6—6 of Fig. 4.

The usual coupler 10 has a customary yoke 11 connected thereto, and secured to the car frame in the usual manner is an abutment 12 against which the draft forces are transmitted. The corresponding abutment 13 takes care of buffer stresses. The abutments and frame constitute a fixed draft pocket or housing in which the draft gear is adapted to be moved by the yoke. An appropriate shock absorbing pad 14 may be placed contiguous each abutment but for purposes of illustration such a pad has been shown in detail as applied only to the abutment 12. The metal constituting the abutment 12 is shaped so that the sides 15 lie adjacent the sides of the shock absorbing device. As shown in Fig. 3 this device or pad comprises a rigid metal backing 16, layer or layers of shock absorbing material 17 and a face plate 18 of wear-resisting metal. Preferably both the backing 16 and the plate 18 are forgings thick enough to withstand the stresses without distorting the metal. The plate 18 is secured to the backing by rivets or other securing means 19 passing through all three portions of the device, the rivet heads being countersunk in the backing and in the plate as shown, permitting relative movement between the backing and plate along the shanks of the rivets.

The sides 15 may be close enough to at least two opposite sides of the shock absorbing material 17 so as to limit any lateral expansion of material under compressive stress and thus reduce to some extent the amount of distortion to which the pad may be subjected. In order to reduce the extent of distortion transversely of the material 17, that is longitudinally of the train, the securing means 19 are placed under an initial tension which imposes an initial compression upon the material 17. The degree of initial compression need not be any critical amount but preferably it is such that loads less than 1000 pounds per square inch are not adapted to compress the material 17 in a direction parallel to the shank of the securing means 19. An advantage of such initial compression resides in the fact that not only is the material compressed under draft stress to a small amount but the reaction from such compression is also limited to a small amount by the securing means 19. The reduction of movements longitudinally of the train aid in taking up slack as quickly as possible.

While the material 17 may be of rubber of a type which is not very live, other equivalent and well known materials may be used. A preferred material includes layers of woven cotton fabric or canvas impregnated with a rubber-like adhesive and having layers of rubber or rubber-like material between them which are relatively thin compared to the thickness of the fabric plies. Both the material for impregnation of the fabric and the interposed layers may be of rubber or rubber-like material. An advantage of having a rubber or rubber-like material very thin between the plies of canvas resides in the fact that such a shock absorbing pad is much less live than ordinary rubber and slow in re-coil so that the re-coil of the shock absorbing material does not aid so much in rebound of the draft gear after impact. Limiting the lateral expansion of the material 17 under heavy compression may assist in limiting the amount of yield. While the backing 16 and the plate 18 have been described as being preferably forgings, where the thickness of these plates is adequate, castings might be used.

In Figs. 4 to 6 is shown another embodiment of the shock absorbing device comprising a backing or holder plate 20, laminated shock absorbing material 21 and a plate 22, the backing and plate being held together by rivets or other securing means 23, the heads of which are preferably countersunk in the plates. The plate 22 fits into a countersunk recess in the backing 20 with only a small lateral clearance as shown in these figures. Slightly more lateral clearance is provided for the material 21. Here again, however, the pad is under an initial compression preferably high enough not to cause substantial reduc-

tion in thickness of the material with loads up to 1000 pounds per square inch.

Among the advantages of this invention may be mentioned the reduction in the amount of compression due to shocks applied to the pads. The reduction in movement longitudinally of the train reduces slack in the train and a tendency for one or more cars to be vibrated back and forth. It has been found that the device as illustrated possesses no substantial distortion or flow of the shock absorbing material under loads up to about 1000 pounds per square inch of area. The flanges of the backing **20** are substantially rigid. In Fig. 6 the lateral clearance between the edges of the shock absorbing material and the countersunk faces of the surrounding flanges may be reduced so that the shock absorbing material is substantially contiguous these flanges. In Fig. 1 the edges of the material **17** may or may not be contiguous the sides **15** for the purpose of limiting the spreading of the pad material under stress.

We claim:

1. The combination in a railroad car draft gear having spaced abutments for taking draft and buffer thrusts, of a cushioned follower device between a portion of the gear and one of said abutments, said cushioned device comprising a holder plate in which cushioning material is countersunk to a substantial depth, a second plate within the countersunk portion of the holder plate and overlying said cushioning material, and headed securing means passing through the holder plate, cushioning material and second plate, with the heads of said securing means countersunk in at least one of said plates, said securing means being under tension when said device is not receiving thrusts, whereby said cushioning material is under an initial compression, said second plate being movable on the securing means relative to the holder plate.

2. The combination in a railroad car having spaced abutments for taking draft and buffer thrusts, of a yoke member, a coupler attached thereto, a draft gear within said yoke, a cushioned follower device within said yoke and between the gear and one of said abutments, said cushioned follower device comprising a pair of spaced rigid plates, a layer of cushioning material filling the space between said plates, and means clamping said plates against said material and passing through the plates and material, said clamping means being headed and having each head countersunk within a plate, one of said plates being slidable axially on said clamping means whereby said cushioning material is compressed.

3. The combination in a railroad car having spaced abutments for taking draft and buffer thrusts, of a draft gear, a cushioned follower device between said gear and one of said abutments comprising a holder in which cushioning material is countersunk to a substantial depth, a plate within the countersunk portion of the holder and overlying said cushioning material, and headed securing means passing through the holder, cushioning material and plate, with the heads of said securing means countersunk in both the holder and plate, said plate and holder each being thicker than said cushioning material, the edge portion of the holder on each side of the countersunk area being wider than the thickness of said plate, the clearance between said plate and the countersunk sides being smaller than the clearance between the cushioning material and said countersunk sides whereby the lateral expansion of the cushioning material is guided by said plate and undue distortion prevented.

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