J. F. COURSON.

DRAFT GEAR.

APPLICATION FILED JAN. 22, 1917.

1,237,759.

Patented Aug. 21, 1917.

2 SHEETS—SHEET 1.

Fig. 1.

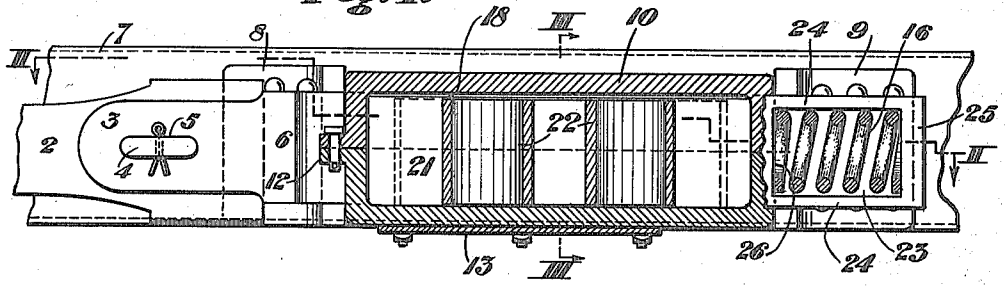



Fig. 2.

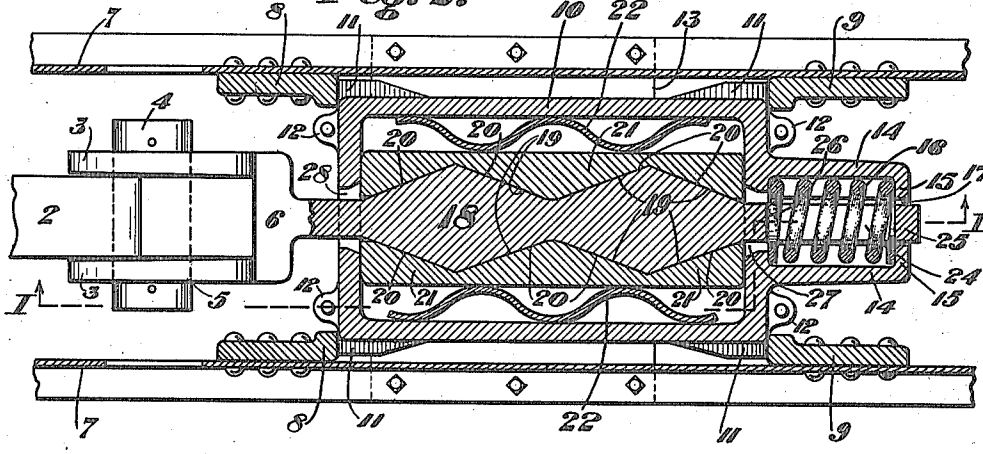



Fig. 3.

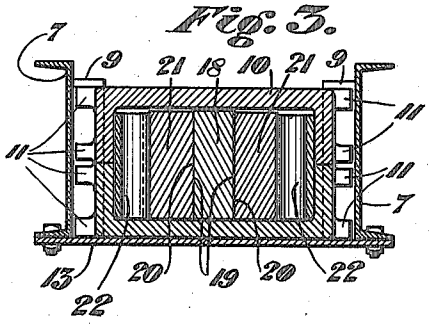



Fig. 4.

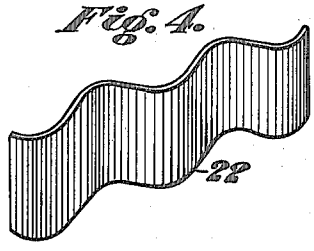
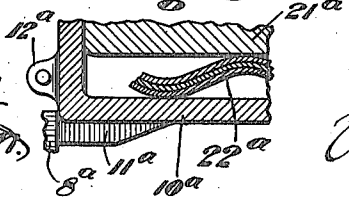



Fig. 5.

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2 SHEETS—SHEET 2.

Fig. 6.

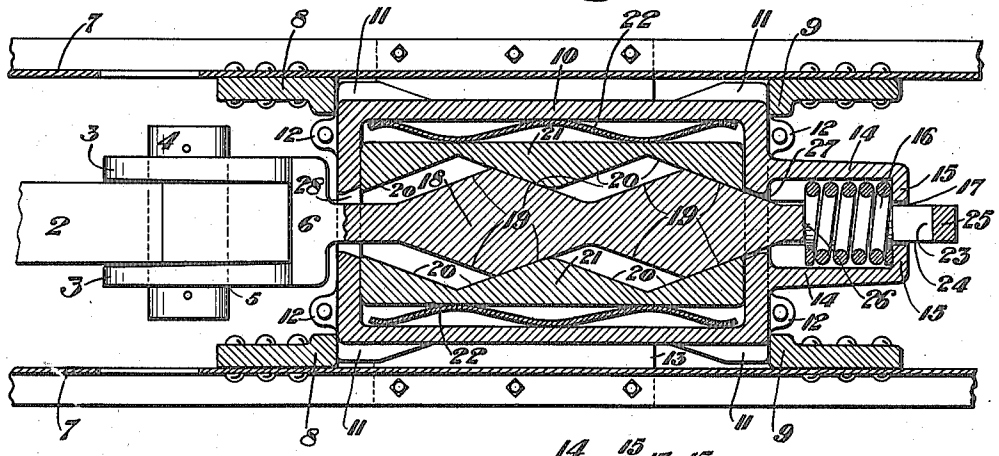



Fig. 7.

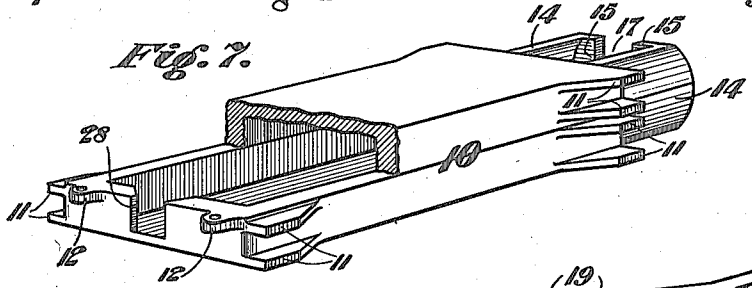



Fig. 8.

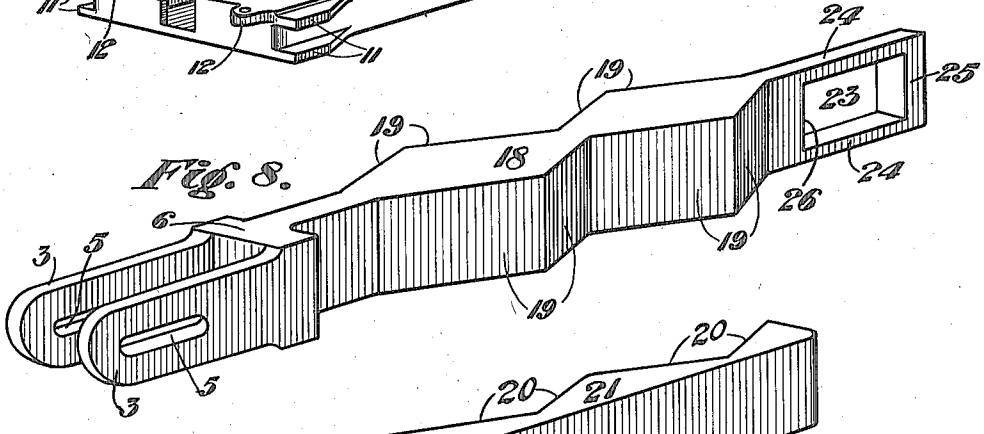
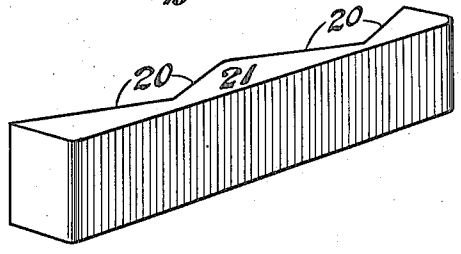



Fig. 9.

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# UNITED STATES PATENT OFFICE.

JOHN F. COURSON, OF PITCAIRN, PENNSYLVANIA.

## DRAFT-GEAR.

1,237,759. Specification of Letters Patent. Patented Aug. 21, 1917.

Application filed January 22, 1917. Serial No. 143,550.

*To all whom it may concern:*

Be it known that I, JOHN F. COURSON, a citizen of the United States, residing at Pitcairn, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Draft-Gears, of which the following is a specification.

My invention is an improvement in draft gears of the class utilizing springs and bearing shoes and expanding mechanism for the bearing shoes acting on buffing or pulling to effect frictional and spring resistance to such strains through the mechanism inclosed within an embracing casing.

The particular objects in view are to provide, in a gear of this type, means for distending the bearing shoes toward the casing and compressing the resistance springs therein with variable pressure proportional to the strain, utilizing a central plunger to distend the bearing shoes and effect compression of the springs, and with accompanying frictional resistance, whereby to effect expansion or retraction of the shoes coincidental with pressure and release movements. The invention also involves the use of a supplemental spring element for effecting retraction of the parts to normal position.

The several objects are accomplished in certain preferred forms of the apparatus as more fully hereinafter described and illustrated in the accompanying drawings, in which:

Figure 1 is a vertical longitudinal sectional view through a complete gear as assembled, the parts being shown in normal position and indicated by the section line I, I, of Fig. 2.

Fig. 2 is a horizontal sectional view partly in elevation indicated by the section line II, II, of Fig. 1.

Fig. 3 is a cross-section indicated by the line III, III, of Fig. 1.

Fig. 4 is a detail perspective view of one of the resistance springs.

Fig. 5 is a detail sectional view showing a modified construction of resistance spring.

Fig. 6 is a horizontal sectional view similar to Fig. 2, showing the parts in position under buffing strain.

Fig. 7 is a perspective view partly broken away, of the gear casing.

Fig. 8 is a similar view of the central expanding wedge bar.

Fig. 9 is a similar view of one of the pressure shoes.

In the drawings, 2 represents the draw-bar of a coupling connected with the front end portion of side bars 3, 3, of the central wedge bar by a transverse bolt or key 4, which extends through slots 5 thereof. Side bars 3 constitute embracing cheeks for the rear end of the draw-bar 2 which abuts directly against a middle transverse end portion 6 of the main central wedge bar.

The gear in its entirety is mounted between the usual center sills 7, 7, of the car framing, which is provided with forward abutments 8, 8, and rear abutments 9, 9, riveted or otherwise secured to the inner faces of the center sills, as shown.

These abutments, extending inwardly, provide for abutting engagement against them of the front and back end portions of the casing 10 and the projecting lugs 11 thereof (see Figs. 2, 6 and 7).

The casing 10 is preferably made of two portions centrally divided as indicated in Fig. 7, connected by bolts through lugs 12 for easy assemblage and separation, and mounting within the car framing. A lower supporting plate 13 extends across underneath the center sills from one side to the other, upon which casing 10 is carried.

At the rear portion of the casing each of its side portions above and below the central parting line is provided with a rearwardly extending housing cage 14 provided with terminal flanges 15 for reception of the releasing spring 16, which bears by by its other end against the main end portion of the casing 10.

Housing portions 14 are located at each side of an intervening clearance slot 17 for reception of the rear spring-engaging terminal portion of the central wedge bar, the side portions of the cage providing rounded embracing housings for the releasing spring 16.

A central wedge bar 18, which is preferably an integral extension of the cheeks 3, 3, and the connecting rear portion 6, (see Fig. 8) is provided at opposite sides with sets of wedge faces 19, 19, alternating in angular direction and of any desired num-

ber, in pairs. These wedge faces correspond to faces 20 of the side pressure shoes 21, 21, which, in the normal position of the gear, snugly embrace the central wedge bar, as shown in Fig. 2.

By this arrangement, upon movement of the central bar in either direction, alternate sets of the wedge faces will act to force the pressure shoes 21, 21, laterally as shown in Fig. 6, and such operation will occur in either buffing or pulling.

The outer faces of the pressure shoes 21 are preferably flat as shown, but may be of any other suitable or desired shape or design. Between the outer faces of the pressure shoes 21 and the inner faces of the side walls of the casing, I insert a spring or springs 22 for interposing resistance upon the springs being compressed by lateral movement of the shoes outwardly.

As shown, springs 22 are of sinuous or of alternating wave-like formation, whereby to bring alternate portions of the spring into engagement with the opposing faces, although any other suitable form of spring may be utilized, if desired.

Central pressure bar 18 embraces spring 16 within housing 14 by means of a clearance opening 23 at the rear end of the bar between upper and lower extensions 24, 24, thereof, connected at the end by a cross bar 25. Such cross bar, in connection with the opposite bearing face 26, engages spring 16 at one end or the other, compressing it upon movement of the bar against flange 15 or the end of the casing, so that the spring will immediately react on cessation of the strain in either direction, renewing the original normal position of the parts.

The back and front end walls of casing 10 are provided with clearance openings 27, 28, for passage of the shank portions of the central bar 18 at each end, and the sides of these openings are spaced apart sufficiently to provide for the necessary longitudinal movement of the bar. They are so designed also as to engage the advancing wedge faces at the desired limit of movement to arrest the bar, as indicated at the rear end of Fig. 6.

In Fig. 5, I show a modified construction in which a plurality of leaves $22^a$ are used whereby to strengthen or reinforce the spring and increase its resistance. The construction and operation are otherwise the same as in the main form.

The construction and operation of the gear will be readily understood and appreciated from the foregoing description by all those familiar with this class of mechanism.

The springs 22 in their normal position are inserted under any desired degree of compression, whereby to press the shoes 21 inwardly against the wedge faces of the central wedge bar, so that any movement thereof in either direction will immediately generate a degree of friction, increasing in proportion to the strain and extent of movement of the bar.

Likewise the springs 22 will effect increasing resistance in the same manner, so that the gear under either buffing or pulling strains will generate a combined spring and frictional resistance in opposition to the shock of impact.

The construction and operation of the gear will be readily understood and appreciated by all those familiar with this class of mechanism, and it provides a simple, economical and efficient means for absorbing the usual shocks of train service.

What I claim is:—

1. A draft gear consisting of a casing, a central pressure bar, shoes flanking the pressure bar and laterally movable thereby, resistance springs between the shoes and casing, and a releasing spring for returning the pressure bar to normal position.

2. A draft gear consisting of a casing, a central pressure bar provided with series of oppositely arranged wedge faces, a shoe at each side of the pressure bar having co-acting wedge faces, resistance springs between the shoes and casing, and a releasing spring engaging the pressure bar and casing.

3. A draft gear consisting of a casing, a central pressure bar provided with series of oppositely arranged wedge faces, a shoe at each side of the pressure bar having co-acting wedge faces, an alternating curved leaf spring between each shoe and the casing, and a releasing spring engaging the pressure bar and casing.

4. In a draft gear, in combination with car framing, a casing mounted in the car framing, a central pressure bar movable longitudinally within the casing having at one end means for connecting it to a draw-bar and provided within the casing with oppositely arranged wedge faces, pressure shoes having co-acting wedge faces engaging the pressure bar at each side, a spring between each shoe and the casing, and a releasing spring for returning the pressure bar to normal position.

5. In a draft gear, in combination with car framing, a casing mounted in the car framing, a central pressure bar movable longitudinally within the casing having at one end means for connecting it to a draw-bar and provided within the casing with oppositely arranged wedge faces, pressure shoes having co-acting wedge faces engaging the pressure bar at each side, a spring between each shoe and the casing, and a supplemental releasing spring between a portion of the casing and a portion of the central pressure bar.

6. In a draft gear, in combination with car framing, a two-part casing mounted in

the car framing having a terminal spring housing, a central pressure bar movable longitudinally within the casing having at one end means for connecting it to a drawbar and provided with oppositely arranged wedge faces and a releasing spring terminal, pressure shoes having co-acting wedge faces engaging the wedge faces of the pressure bar at each side, a spring between each shoe and the casing, and a supplemental releasing spring within the terminal housing engaging the terminal of the bar.

7. In combination with the center sills provided with abutments, a separable casing engaging said abutments having a terminal divided spring housing, a central pressure bar movable longitudinally within the casing having at its rear end a releasing spring terminal within the spring housing and wedge faces along its middle opposite sides, a drawbar connected with the front end of the pressure bar, pressure shoes having wedge faces engaging the wedge faces of the pressure bar, and a spring between each shoe and the casing.

8. In combination with the center sills provided with abutments, a separable casing engaging said abutments having a terminal divided spring housing, a central pressure bar movable longitudinally within the casing having at its rear end a releasing spring terminal within the spring housing and wedge faces along its middle opposite sides, a drawbar connected with the front end of the pressure bar, pressure shoes having wedge faces engaging the wedge faces of the pressure bar, and an alternating elliptic leaf spring interposed between each shoe and the casing.

9. In combination with the casing provided with a releasing spring and separable wedge faced pressure shoes and springs adapted to be expanded toward opposite sides of the casing; a central wedge bar engaging the pressure shoes and said releasing spring.

In testimony whereof I hereunto affix my signature.

JOHN F. COURSON.