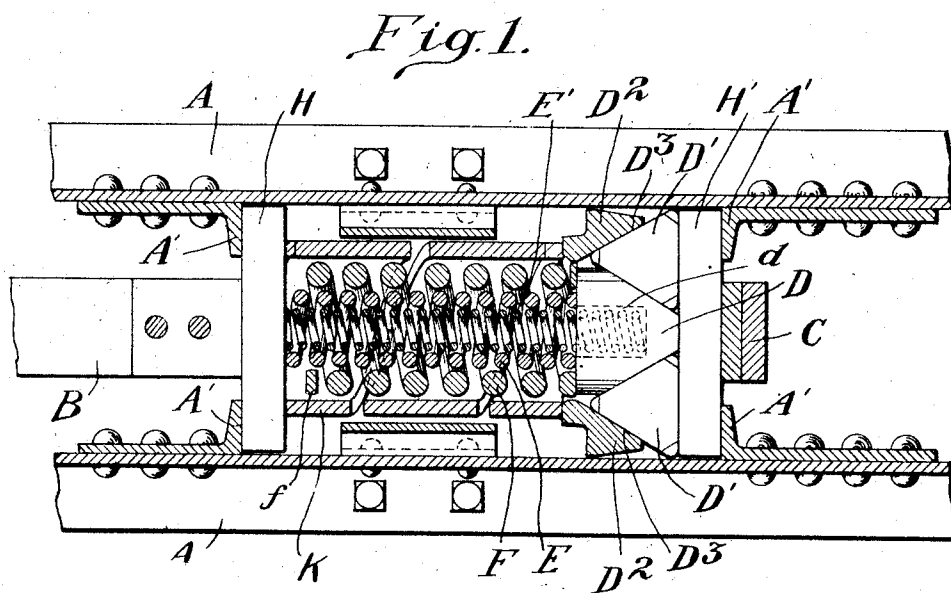
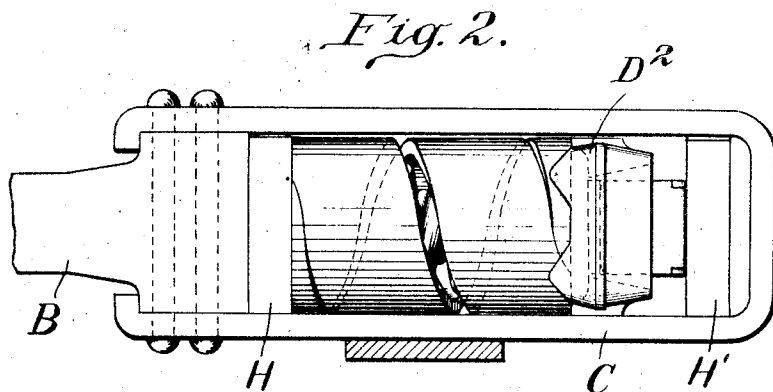


1,189,087.

2 SHEETS--SHEET 1.



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Richard D. Gallagher Jr

By Charles Thomas
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1,189,087.

Patented June 27, 1916.

2 SHEETS—SHEET 2.

Fig. 3.

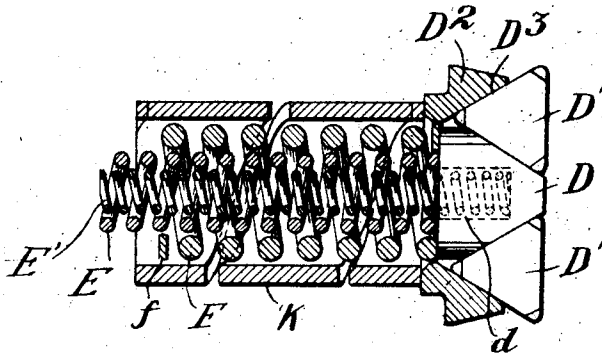
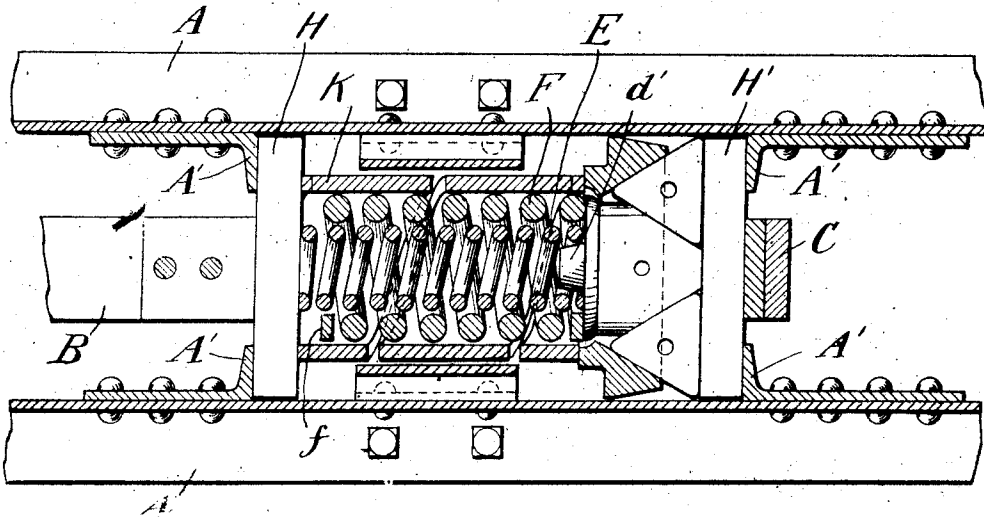


Fig. 4.



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UNITED STATES PATENT OFFICE.

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DRAFT AND BUFFING RIGGING FOR RAILWAY-CARS.

1,189,087.

Specification of Letters Patent. Patented June 27, 1916.

Application filed August 11, 1915. Serial No. 45,015.

To all whom it may concern:

Be it known that I, RICHARD D. GALLAGHER, JR., a citizen of the United States, residing at New York, in the county and State of New York, have invented certain new and useful Improvements in Draft and Buffing Rigging for Railway-Cars; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, and to the figures and characters of reference marked thereon.

This invention relates to improvements in apparatus for yieldingly resisting strains and wherein the yielding resistance of springs is augmented by frictional resistance between frictional elements.

The improvements of the present invention are particularly adapted for use in connection with draft and buffing rigging for railway cars and the like, although it will be understood that the invention is applicable in all cases wherein it is desired to yieldingly resist the relative movements of parts.

In my prior Patent No. 776,390, granted November 29, 1904, I have illustrated an apparatus employing successively-acting springs in connection with the friction elements, whereby the apparatus is vested with a capacity for varying the resistance to a greater degree than could be secured by the simple augmentation of spring resistance. The advantages of employing successively-acting springs in connection with the friction elements have been fully set forth in said prior patent, but among these it may be here mentioned that the friction elements are not required to be constantly in action when the apparatus is resisting slight strains and thus constantly subjected to wear. One of the springs operates to absorb preliminary strains directly and independently of the friction elements, the friction elements not being called into play until the strains have reached a sufficient magnitude to overcome or nearly overcome the yielding resistance of the spring. This construction, considered broadly, results in a

much longer life of the apparatus by preventing undue and unnecessary friction in the friction elements, and thus reducing wear of the contacting surfaces.

The object of the present invention is to provide a draft rigging in which all the above mentioned advantageous features of construction are present, and with the further improvement that the preliminarily acting spring or yielding resistance member operates to positively increase the resistance to compression of the main yielding resistance member when the friction elements are operated and also operates to supplement the resistance of the main resistance member to frictional movements of the friction elements, by causing the preliminarily acting spring to resist movements of the friction elements, as a unit, while the main yielding resistance member is resisting relative movements of the friction elements. In the preferred form of the invention, the preliminarily acting spring is embodied in an inherently axially resilient casing which surrounds the main yielding resistance member or spring operating in connection with the main friction elements. A casing of this character affords an efficient protective covering for the inclosing yielding resistance member, supplements and increases the range of resistance of the rigging under shocks of sufficient magnitude to operate the friction elements, in addition to absorbing shocks of lesser magnitude, so as to remove unnecessary friction and strains from the main resilient elements. Furthermore, the casing has the property of expanding and contracting axially with inclosed yielding resistance member, and, hence, any possibility of the parts jamming when under stress is avoided.

Other objects of the invention are to generally improve the construction of a draft and buffing rigging, and a full understanding of the nature and objects of the invention will be attained from the ensuing detailed description, when taken in connection with the accompanying drawings which illustrate a structural embodiment of the invention in a preferred form.

The novel features of the invention will be particularly pointed out and specified in the appended claims.

In the drawings, Figure 1 is a sectional view through a draft and buffing rigging adapted for application to railway cars and embodying the improvements of the present invention. Fig. 2 is an elevation of the rigging shown in Fig. 1, the rigging being removed from its position between the longitudinal center sills of a car. Fig. 3 is a view similar to Fig. 1, and illustrating the parts in partially disassembled relation. Fig. 4 is a sectional view of a modified form of draft and buffing rigging.

Like characters of reference in the several figures indicate the same parts.

In both forms of the invention illustrated, which forms, however, it will be understood, merely show the invention as applied to one type of frictional draft gear, the rigging is mounted between the longitudinal center sills or draft-timbers of a railway car, and such timbers are indicated in Figs. 1, 3 and 4 of the drawing by the letter A. The usual stops A' are mounted on the draft-timbers A for limiting the movement of the rigging in both directions and transmitting strains to the car frame. Pressure under draft and buffing stress is applied to the rigging by a drawbar B, of the usual form, and the yoke or tail-strap C which embraces the strain resisting elements of the rigging.

The main friction elements adopted for illustration, in connection with the present invention, are of a type now well known and consists, essentially, of a central wedge block element D, outer wedge blocks D', and a friction box D² having oppositely inclined faces D³ within which are located the central wedge block element D, and the outer wedge blocks D'. Said central wedge block element and outer wedge blocks are shown as being substantially triangular in form, and the outer wedge blocks are adapted to be forced transversely outwardly by pressure against the central wedge block element in one direction. When pressure is applied in the opposite direction, the friction box D² is advanced so as to move said wedge blocks D' transversely inwardly toward each other and cause the central wedge block element D to retreat. Central, nested springs E, E' are provided for resisting longitudinal movement of the central wedge block element D, and in the form of the invention illustrated in Figs. 1, 2 and 3, the inner spring E' is seated at one end within a central recess d in said wedge block element, and at the opposite end against a follower H. On the other side of the wedge blocks is another follower H', and the followers H, H' serve as a convenient means between which the friction elements and springs or

yielding resistance elements are supported axially. Springs E, E' are somewhat longer than the distance between outer follower H and the outer face of central wedge block element D, as shown in Fig. 3, so that when assembled, the springs are normally under a slight stress, sufficiently to hold the central wedge block elements and the outer wedges in their normal release position, as shown in Fig. 1.

The main resistance to relative movements between the central wedge block element D and wedges D' is afforded by a relatively heavy spring coil F, surrounding coils E, E', and of somewhat shorter length than the distance between outer follower H and the outer face of element D. From this, it will be noted that coil F does not come into play until sufficient stress is applied to the rigging to cause follower H to abut against the free end f of coil F. Movement of follower H toward coil F or coil F toward follower H, depending upon the direction of stress, is resisted by central coils E, E', but mainly by an independently operative yielding resistance element consisting of the novel radially and axially, expansible and contractible casing K interposed between friction box D² and follower H.

In all the forms of the invention, the casing K consists of a flat helical spring element which almost completely surrounds the inner yielding resistance elements of the rigging, and is of sufficient strength to withstand and absorb slight shocks, such as the normal "jiggling" of the rigging when the cars are in motion, without it being necessary to call into play the friction elements. When, however, the casing K which has a pressure resistance less than the combined resistance of the coil E and wedge blocks or friction elements, has been preliminarily compressed, or nearly compressed by strains of greater magnitude than could be resisted by casing K alone, the movement of follower H against spring F, should a buffing stress be applied, is transmitted by spring F to the wedge blocks. The pressure of inherently resilient casing K against friction box D² resists movement of the friction elements as a unit. Frictional movement of the wedge blocks relatively to each other, however, is directly resisted by inherent yielding resistance of spring F, and indirectly by the pressure applied by casing K against friction box D², which, as before stated, opposes the tendency of the outer wedges D' to move outwardly under the stress applied by the central wedge block element D. The resistance to compression of the spring F is further increased by the inherent resistance of casing K. Casing K, however, being axially resilient, does not increase the resistance of spring F to a degree sufficiently great to result in jamming

of the yielding resistance elements, but on the other hand yields to some extent under maximum shocks and the recoil, directly in conjunction with the other strain-bearing elements of the rigging. In draft, the action of the casing is substantially the same with the exception, of course, that the direction of movement of the parts is reversed.

In the modification illustrated in Fig. 4, a single central coil E^2 is provided and retained in position by a centrally projecting lug d' on the central wedge block element D. In operation, however, the modification is substantially similar to the form above described.

What is claimed is:

1. In an apparatus of the character described, the combination of friction elements adapted to move with relation to each other, a yielding resistance element operable in conjunction with the friction elements, another yielding resistance element surrounding the first-named resistance element and operable independently thereof, all the resistance elements subject to radial expansion under axial stress and the independently operative resistance element arranged to be compressed by axial stress preliminary to the yielding resistance element which operates with the friction elements and increase the resistance to compression of said cooperating resistance and friction elements.

2. In an apparatus of the character described, the combination of friction elements adapted to move with relation to each other, a yielding resistance element operable in conjunction with the friction elements and arranged to resist relative movements of the friction elements in one direction, and an axially expansible and contractible casing surrounding said yielding resistance element and supplementing the resistance of said element to relative movements of the friction elements.

3. In an apparatus of the character described, the combination of friction elements adapted to move with relation to each other, a yielding resistance element operable in conjunction with the friction elements and arranged to resist relative movements of the friction elements in one direction, and an axially, expansible and contractible spring casing surrounding said yielding resistance element and supplementing the resistance of said element to relative movements of the friction elements.

4. In an apparatus of the character described, the combination of friction elements adapted to move with relation to each other, a yielding resistance element operable in conjunction with the friction elements and arranged to resist relative movements of the friction elements, and an axially, ex-

pansible and contractible casing surrounding the yielding resistance element and arranged to resist movements of the friction elements as a unit.

5. In an apparatus of the character described, the combination of friction elements adapted to move with relation to each other, a yielding resistance element operable in conjunction with the friction elements and arranged to resist relative movements of the friction elements, and an axially, expansible and contractible casing surrounding the yielding resistance element and arranged to resist movement of the friction elements as a unit and to be compressed preliminarily to the yielding resistance element.

6. In an apparatus of the character described, the combination of friction elements adapted to move with relation to each other, a yielding resistance element operable in conjunction with the friction elements, and an axially, expansible and contractible casing surrounding the yielding resistance element and arranged to be compressed preliminarily to the yielding resistance element.

7. In an apparatus of the character described, the combination of friction elements adapted to move transversely with relation to each other, a yielding resistance element operable in conjunction with the friction elements and arranged to resist relative transverse movement of the friction elements in one direction, and an inherently axially resilient casing surrounding the yielding resistance element and arranged to resist relative transverse movement of the friction elements in the opposite directions.

8. In an apparatus of the character described, the combination of friction elements adapted to move with relation to each other, a yielding resistance element operable in conjunction with the friction elements, and an inherently resilient casing surrounding the yielding resistance element and having a pressure resistance less than the combined pressure resistance of the yielding resistance element and the friction elements.

9. In an apparatus of the character described, the combination of friction elements adapted to move with relation to each other, a yielding resistance element operable in conjunction with the friction elements, and an inherently resilient casing surrounding the yielding resistance element and having a pressure resistance less than the combined pressure resistance of the yielding resistance element and the friction elements, said casing arranged to yield under pressure preliminarily to the resistance element and the friction elements.

10. In an apparatus of the character described, the combination of a friction unit including a longitudinally movable friction element and transversely movable friction elements all movable relatively to each other, a yielding resistance element operable in conjunction with the friction unit and arranged to resist relative transverse movement of the transversely movable friction element in one direction, and an inherently resilient casing surrounding the yielding resistance element and arranged to resist relative movement of the transversely movable friction elements in the opposite direction and bodily movement of the friction elements as a unit. 15

RICHARD D. GALLAGHER, JR.