No. 684,552. Patented Oct. 15, 1901.

G. P. RITTER.

FRICTION GRIP MECHANISM FOR DRAFT RIGGING, &c.

(Application filed Aug. 1, 1901.)

(No Model.) 2 Sheets—Sheet 1.

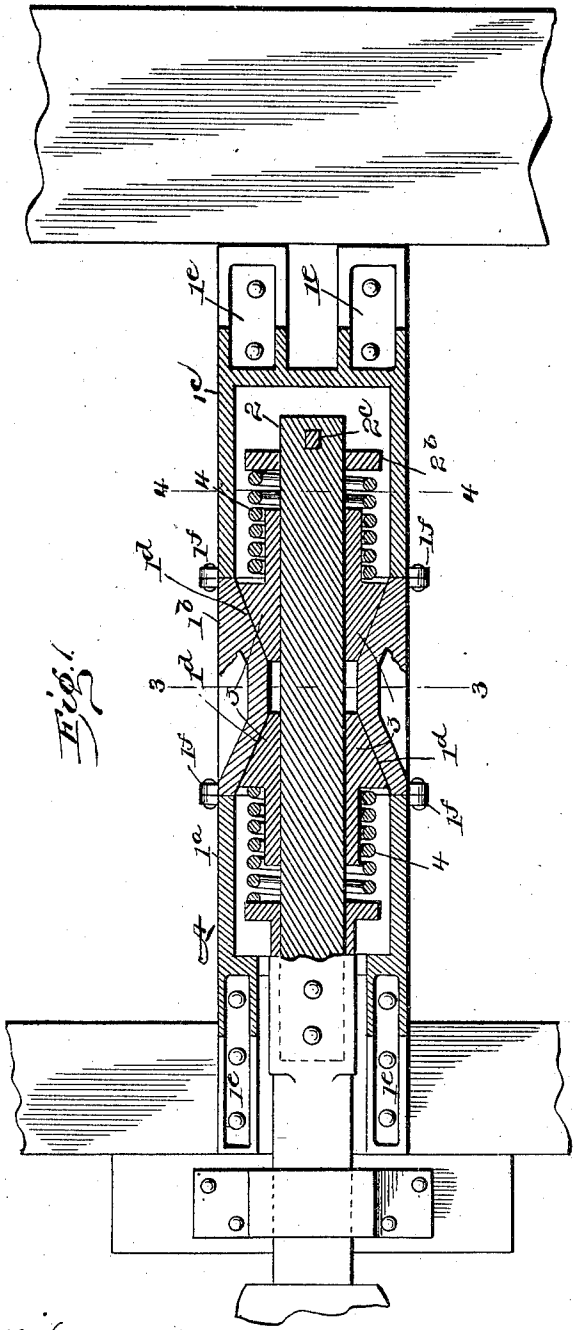


Fig. 1.

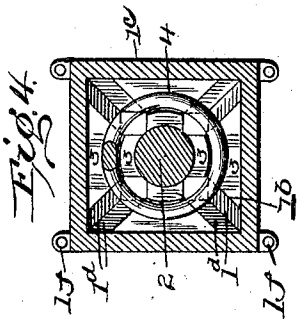


Fig. 4.

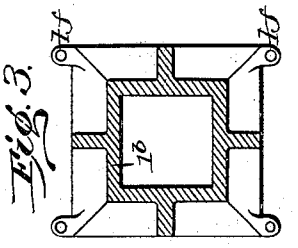


Fig. 3.

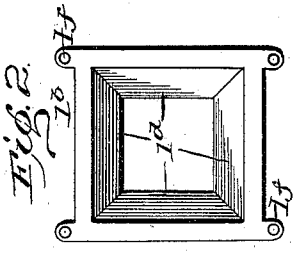


Fig. 2.

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(No Model.) 2 Sheets—Sheet 2.

Fig. 5.

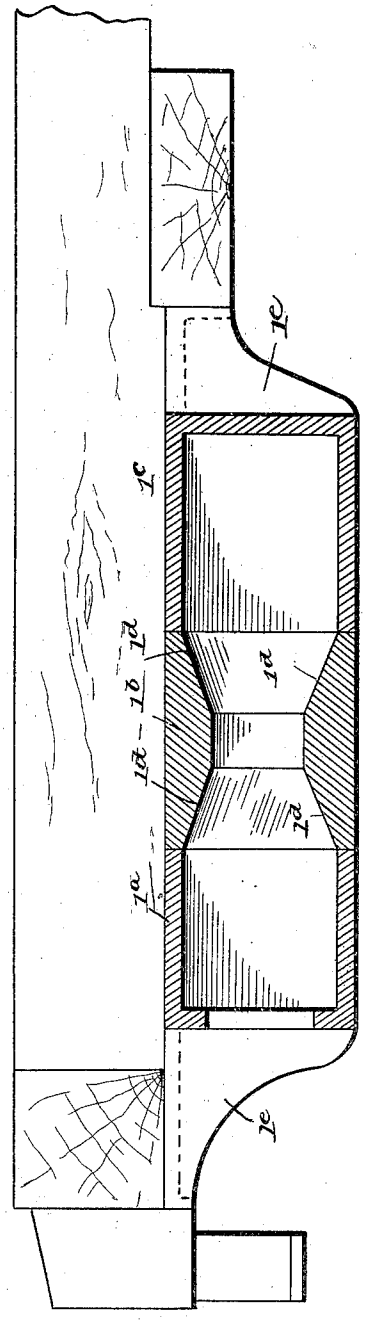
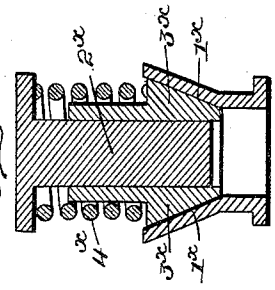


Fig. 6.



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GILBERT P. RITTER, OF CHICAGO, ILLINOIS.

FRICTION-GRIP MECHANISM FOR DRAFT-RIGGING, &c.

SPECIFICATION forming part of Letters Patent No. 684,552, dated October 15, 1901.

Application filed August 1, 1901. Serial No. 70,527. (No model.)

To all whom it may concern:

Be it known that I, GILBERT P. RITTER, a citizen of the United States, residing at Chicago, in the county of Cook, State of Illinois, have invented certain new and useful improvements in yielding friction-grip mechanism applicable to draft-rigging for railway-cars, car-buffers, car-springs, and like devices where the shock incident to the sudden reaction of springs is to be minimized or avoided, of which the following is a specification.

In railway practice a difficulty constantly encountered where springs are employed to carry a load is the shock incident to the sudden reaction of the springs when temporarily relieved of the load, and to overcome such shocks or restrain the reaction of the springs, which tends to the deterioration of the structure, friction-dampers have been heretofore combined with the springs to retard their reaction. Furthermore, in the case of spring draw-bars it has been sought to modify the reaction of the springs by the interposition of a friction-grip between the spring and the draw-bar, so that the spring should form the initial and the friction-grip and spring the ultimate support of the load.

In carrying out my invention I apply the principle of a wedge; and to this end my invention may be generally stated as the combination, with an including friction element and an included friction element, said elements being relatively movable and one of which shall be of wedge form, of an incline and a spring or equivalent yielding medium interposed between the load and one of said friction elements, whereby the friction-grip is gradually applied and withdrawn and is always proportioned to the load.

There are other minor features of invention, all as will hereinafter more fully appear.

For purposes of illustration I have chosen the draft-rigging of a railway-car as its main application, because the invention was devised with especial reference to its utility in such a position; but in addition thereto I have also illustrated a truck-spring as an instance of its special value without, however, intending to limit the invention by either of such illustrations.

Referring to the drawings forming a part of this specification, Figure 1 is a horizontal section, viewed from below, of a draft-rigging embodying my invention. Fig. 2 is an end view of the middle or hopper section of the housing or box for the draw-bar. Fig. 3 is a transverse central section of the middle section of the draw-bar housing, taken on the line 3 3, Fig. 1, the draw-bar, &c., omitted. Fig. 4 is a transverse section of the housing, the draw-bar, the friction elements, and the spring, taken on the line 4 4, Fig. 1. Fig. 5 is a longitudinal vertical section of the box or draw-bar housing, the draw-bar, &c., omitted to show the manner of securing the draft-rigging to the car-body; and Fig. 6 is a longitudinal central section of a car or truck spring embodying the invention.

Like symbols refer to like parts wherever they occur.

In the drawings, A indicates the casing or housing for the reception of the draw-bar 2, the wedge-shaped friction elements 3, and the yielding element or spring 4.

B indicates a coupling which may be of any desired form and which is secured to the draw-bar in any suitable manner. The casing or housing A is preferably composed of three sections 1^a, 1^b, and 1^c, (though it may be made of two longitudinally-separable sections, if preferred,) the end sections 1^a and 1^c of which are similar and of box form to close the ends of the casing, while the middle section 1^b is of double-hopper form or otherwise constructed to provide oppositely-placed inclines 1^d, which converge toward the draw-bar 2. The end sections 1^a 1^c of the housing are each provided with brackets 1^e or equivalent means for bolting the housing to the end and center sill or other suitable portion of the car-body, and the middle section may be secured between the end sections by bolts 1^f, so that all strains thereon will be transmitted directly to the car-body through one or other of the end sections.

2 indicates the draw-bar, which has been herein shown as solid and cylindrical, as a cylinder will afford the greatest friction-surface for a given diameter of draw-bar, though, if preferred, the draw-bar may be hollow and of any desired cross-section. To this draw-bar may be attached any suitable coupler, and upon the draw-bar within the casing is a

follower 2^a, either formed on or secured to the draw-bar, or, as illustrated in the drawings, provided with a collar which bears on the shoulder formed by the junction of the coupler B and draw-bar 2. On the opposite end of the draw-bar is a second follower 2^b and a pin 2^c or equivalent means for confining the follower 2^b.

3 indicates friction elements, of which any desired number may be used, preferably, as in the present instance, four in number, equally disposed or grouped around the draw-bar 2, (or included friction element,) the inner or friction faces of which will conform to the draw-bar, (or included friction element,) and their outer faces will be inclined to conform to the inclines 1^d on the interior of the middle section 1^b of the housing. The friction-faces of these wedge-shaped elements 3 may be extended as desired, preferably sufficient to be included within the springs 4.

4 indicates springs which surround the draw-bar 2, as also the extensions of the friction element 3, resting at one end upon the friction elements 3 and at the other upon the followers which move with the draw-bar, and said springs are introduced under initial compression, so as to maintain or tend to maintain the wedge friction elements 3 at all times in frictional contact with the draw-bar 2, the frictional grip being gradually increased upon one set of friction elements as it decreases upon the other, according to the direction and weight of the load. While a coiled enveloping spring 4 is the preferred construction, yet individual springs for each wedge-shaped friction element 3 may be substituted therefor or the springs may be increased in number to attain the desired resistance for any given load. In assembling the friction draft-rigging hereinbefore described the follower 2^a will first be secured on the draw-bar 2. Then one set of friction elements 3 and their spring 4 are applied to the draw-bar, after which the draw-bar 2 is passed through the central opening of the middle section 1^b of the housing, the second set of friction elements 3 and their spring 4 applied, the end follower 2^b is put on the draw-bar and secured by the pin 2^c or otherwise, and finally the end sections 1^a 1^c of the housing applied and bolted to the middle section 1^b thereof.

The operation of the yielding-grip mechanism will be as follows: Upon the application of the load to the draw-bar 2 (included friction element) the pressure will be transmitted through spring 4 to the wedge frictional elements 3 3, which will be thereby forced in between the inclines 1^d of the housing and the draw-bar or included element and will exert a friction-grip on the draw-bar proportionate to the load, the grip, however, being measurably a yielding grip, which will not give rise to any sudden shock either in its application or release, both of which will be gradual. The pulling and buffing sets of friction elements, as shown in the drawings, it will be noted, are identical in construction and combination, the sets, however, being reversely arranged, so that they alternately increase and diminish their grip, according to the direction of the load or force. It will also be noted that the typical combination is one wherein there is a single central or included friction element, (the draw-bar 2,) surrounding or including friction elements, (wedges 3,) a yielding medium (spring,) interposed between the friction elements and the load, and an incline for forcing the friction elements in contact, and that such typical combination is equally applicable to truck and like springs, as shown in Fig. 6 of the drawings, wherein $2^\times$ indicates the included element, $3^\times$ the including elements of wedge form, and $1^\times$ the converging inclines which force the friction elements in contact through the medium of spring $4^\times$ or equivalent interposed yielding device.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a friction-grip mechanism, the combination of a central or included friction element, an incline, a wedge-friction element interposed between the incline and the central or included friction element, and a spring interposed between said friction elements; substantially as and for the purposes specified.

2. In a draft-rigging for railway-cars, a friction-grip mechanism, comprising a central or included friction element, an incline, an including wedge-shaped friction element interposed between the incline and the included or central friction element, said friction elements being relatively movable, and a spring interposed between the friction elements, substantially as and for the purposes specified.

3. In a draft-rigging for railway-cars, the combination with a centrally located or included friction element, of a plurality of inclines which converge toward the centrally-disposed friction element, a plurality of reversely-arranged wedge-shaped friction elements surrounding the central friction element and coacting therewith, and springs interposed between the coacting friction elements, substantially as and for the purposes specified.

4. In a draft-rigging for railway-cars, the combination with an incline, of a plurality of friction elements which are relatively movable longitudinally, one of said elements being wedge-shaped and arranged in contact with the incline, and a spring interposed between the friction elements, substantially as and for the purposes specified.

5. In a draft-rigging for railway-cars, a friction mechanism comprising a central or included friction element, an incline, a wedge-shaped friction element having a friction-surface which conforms to the surface of the central or included friction element, and a

coiled spring interposed between the said friction elements and enveloping the said friction-surfaces, substantially as and for the purposes specified.

6. In a draft-rigging for railway-cars, the combination with a centrally located or included friction element, of an including friction element, said elements having a relative longitudinal movement in contact, and an incline for forcing the friction elements toward the axial center of the draft-rigging, substantially as and for the purposes specified.

7. In a draft-rigging for railway-cars, the combination with a housing having converging inclines in its interior, of an endwise-movable draw-bar having a follower, wedge-shaped friction elements which are interposed between the inclines of the housing and the draw-bar, and a spring interposed between the follower and the wedge-shaped friction elements, substantially as and for the purposes specified.

In testimony whereof I affix my signature, in presence of two witnesses, this 1st day of August, 1901.

GILBERT P. RITTER.

Witnesses:
J. M. FOWLER, Jr.,
HUGH M. STERLING.