

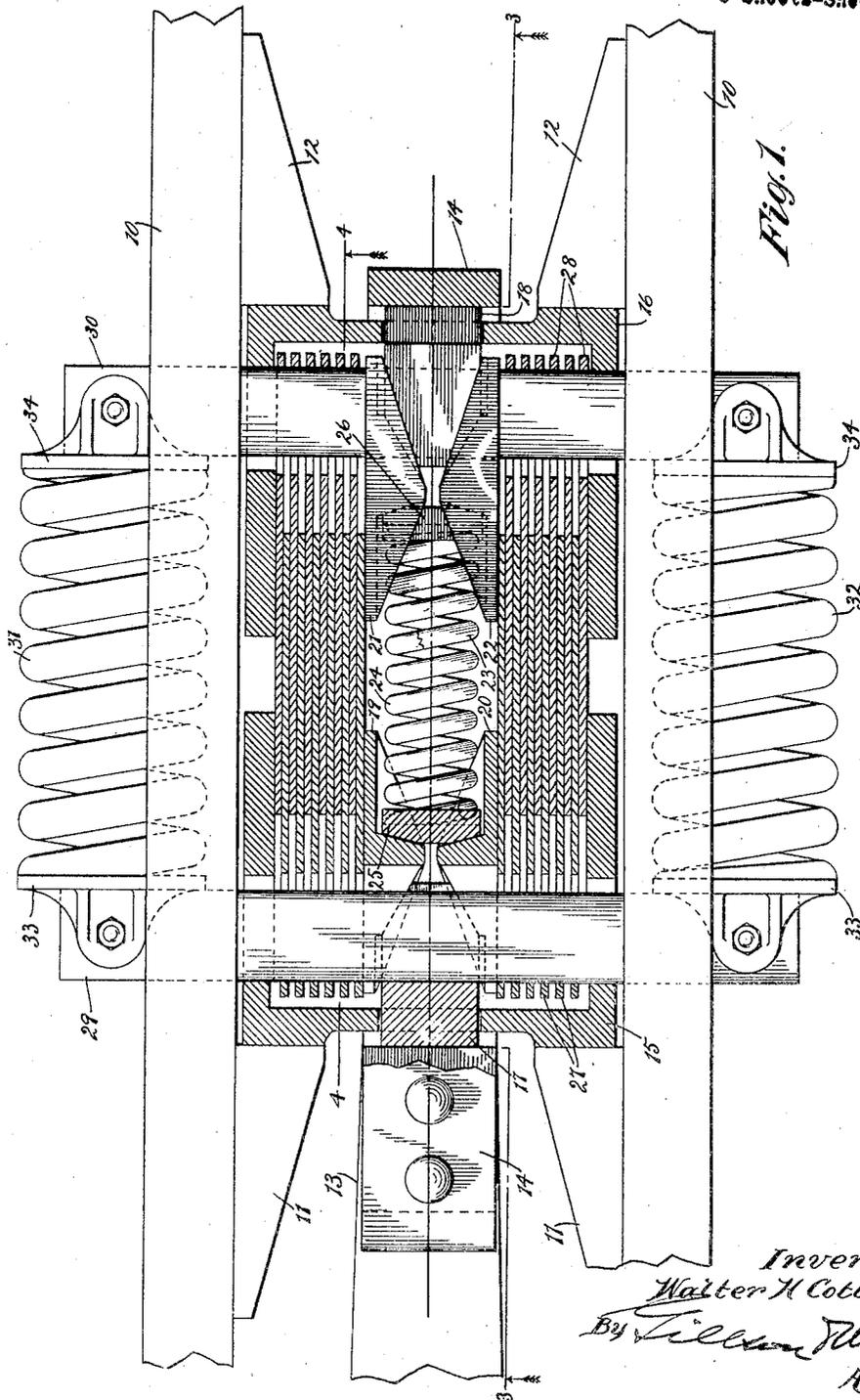
Nov. 18, 1924.

W. H. COTTON
DRAFT GEAR

1,515,840

Filed Sept. 17, 1923

3 Sheets-Sheet 1



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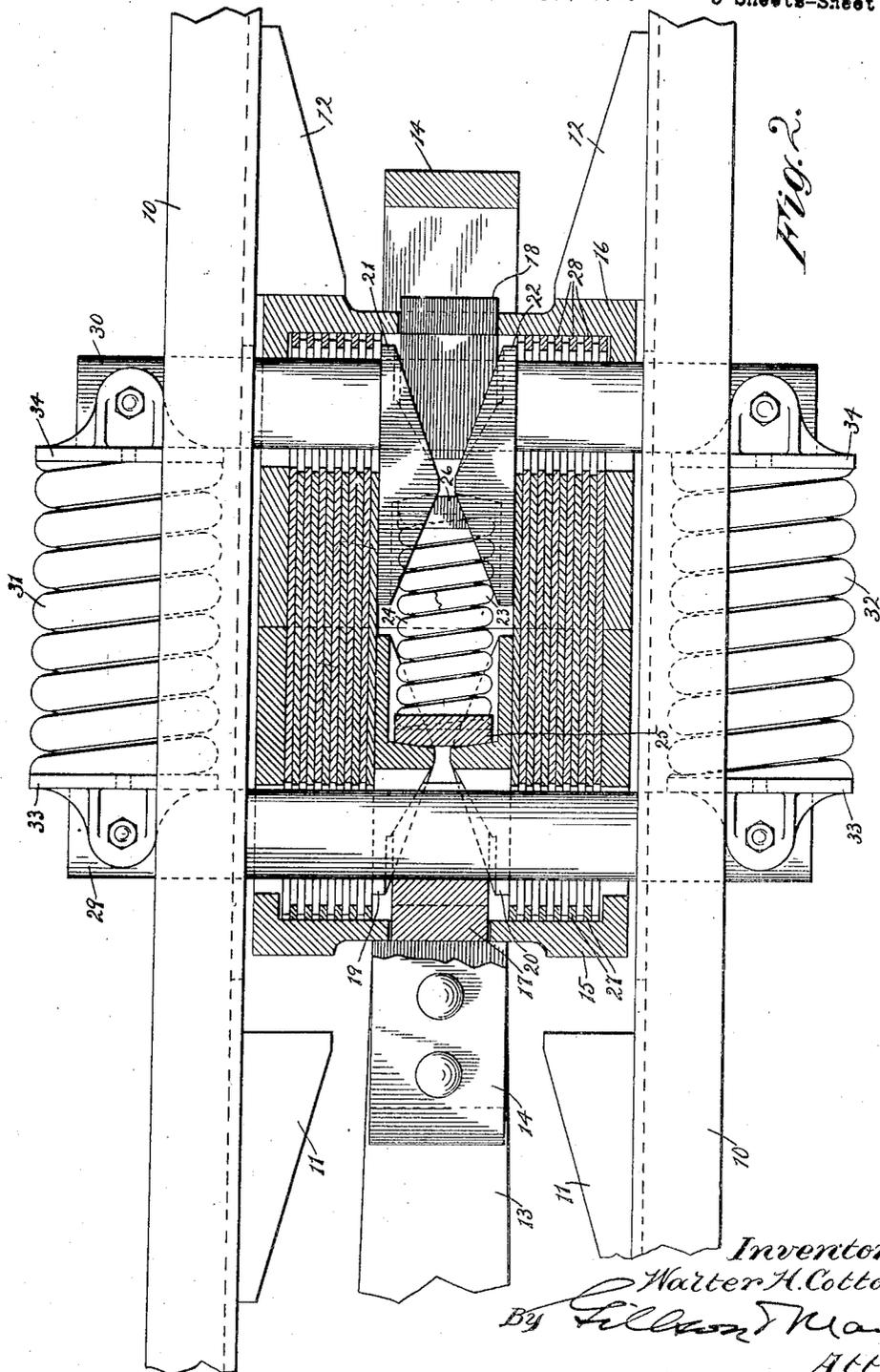


Fig. 2.

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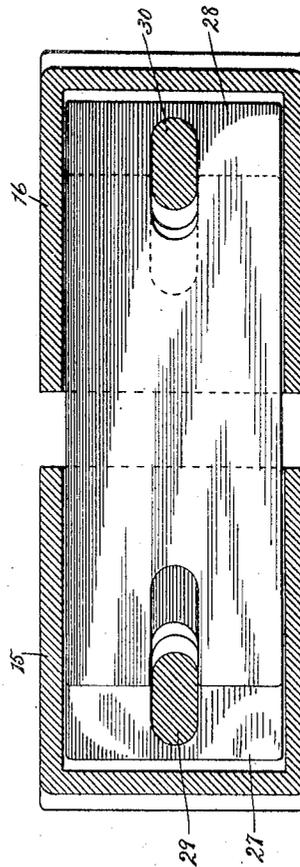
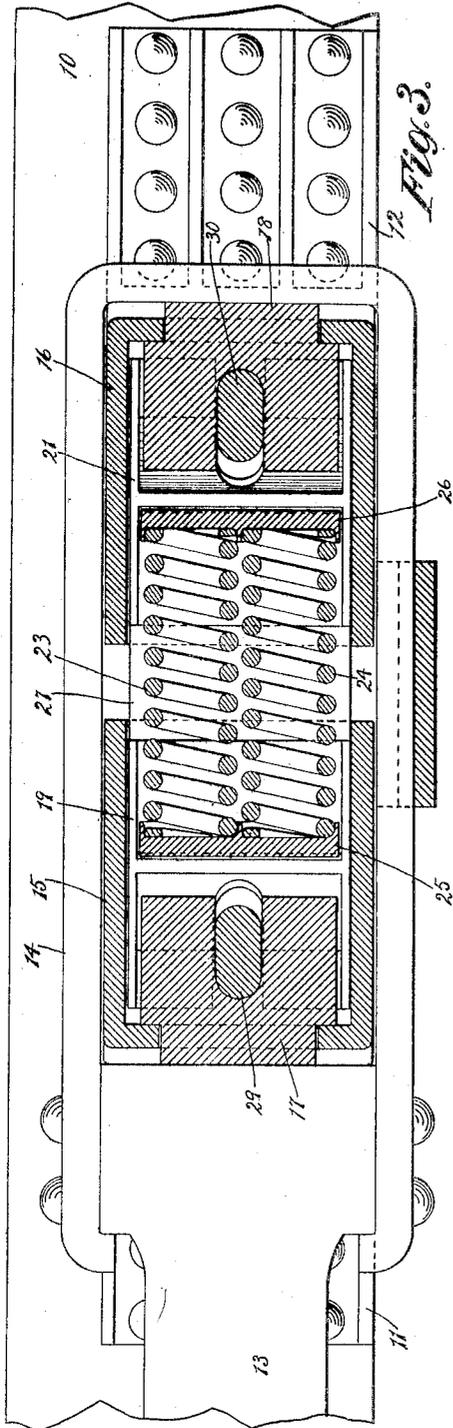
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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE.

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DRAFT GEAR.

Application filed September 17, 1923. Serial No. 663,082.

To all whom it may concern:

Be it known that I, WALTER H. COTTON, a citizen of the United States, and resident of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Draft Gears, of which the following is a specification, and which are illustrated in the accompanying drawings, forming a part thereof.

The invention relates to draft gears or shock absorbing devices for railway cars, its object being to secure high efficiency and smoothness of action both in compression and release.

A preferred embodiment of the invention is hereinafter described, and is illustrated in the accompanying drawings, in which—

Fig. 1 is a central plan section through the gear and tail strap of the coupler, details of the coupler and draft sills of a car being shown in plan;

Fig. 2 is a similar view, the gear being under compression in buffing;

Figs. 3 and 4 are vertical sections on the lines 3—3 and 4—4, respectively, of Fig. 1.

At 10, 10, there is represented a pair of center or draft sills of a railway car, of any preferred construction; at 11, 11, a pair of draft lugs, and at 12, 12, a pair of buffing lugs, attached to the sills in any preferred manner. The butt end of a coupler is represented at 13, and its extension, yoke or tail strap for encircling the gear is shown at 14.

The improved gear comprises a pair of chambered followers 15, 16, cooperating, respectively, with the draft and buffing lugs, the side and top and bottom walls of these followers being of such length that those of the one will make contact with those of the other when the gear is fully compressed, serving to prevent over-compression and consequent injury of the springs.

The end wall of each of the followers is apertured to loosely receive a wedge-block 17, 18, the former being seated against the butt end of the coupler and the latter against the rear cross member of the yoke. The inner portions of the side faces of the blocks 17, 18, incline inwardly to give these blocks the wedge form. Each of these wedge-blocks cooperates with wedging faces on a pair of friction shoes 19, 20, and 21, 22, the outer faces of which are parallel with the axis of the gear. A pair of helical

springs 23, 24, react between instanding shoulders on the friction shoes, spring seats 25, 26, being interposed between the springs and such shoulders. Preferably the shoulders are slightly inclined to the axis of the gear, and the cooperating faces of the spring seats are given a complementary form.

A group of intercalating friction plates is interposed between the two friction shoes on each side of the gear and the adjacent side walls of the followers. Each of these groups comprises a set of plates 27, which normally extends from a short distance from the inner face of the end wall of the follower 15 and terminates a short distance within the casing of the follower 16; and a set of plates 28 which normally extend from a short distance from the inner surface of the end wall of the follower 16 to a short distance within the casing of the follower 15.

Bars 29, 30, extend, respectively, through the wedge-block 17, the friction shoes 19, 20, the plates 27 of both groups of friction plates, the side walls of the follower 15, and through the sills 10, 10; and through the wedge-block 18, the friction shoes 21, 22, the plates 28 of both groups of friction plates, the side walls of the follower 16, and the sills 10, 10. All of the named elements through which these bars pass are suitably slotted to accommodate them, and, with the exception of the blocks 17, 18, such slots are of greater length than the width of the bars to permit relative movement with respect thereto.

Helical springs 31, 32, react, respectively, between adjacent ends of the bars 29, 30, being seated against seats 33, 34, attached thereto.

The gear as described can, if desired, be assembled at the time of installation. When applied to a car the parts normally occupy the position as shown in Fig. 1, the wedge-blocks 17, 18, projecting a short distance beyond the outer faces of the end walls of the two followers and bearing, respectively, against the coupler butt and the cross member of the tail strap. Both of the last-named members are spaced a short distance from the adjacent follower. The ends of the friction plates 27 are out of contact with the inner face of the follower 15, and the ends of the friction plates 28 are out

of contact with the inner face of the follower 16. Both sets of plates touch at the outer ends of their slots the bar 29, 30, which passes through them. These two bars
 5 are at the outer ends of the slots in the side walls of the followers through which they pass. All of the springs are under slight tension.

Under the influence of buffing stresses the
 10 wedge-block 17 is carried backward with the coupler 13, and with it moves the bar 29, moving it to the inner ends of the slots in the side walls of the follower, which are of greater length than the width of the bar.
 15 The wedge-block has a spreading action on the friction shoes 19, 20, and tends to move them inwardly, this movement, however, being resisted by the springs 23, 24. Pressure transmitted through these springs
 20 tends to move the friction shoes 21, 22, backwardly, this action, however, being resisted by the wedge-block 18, which spreads the shoes. The spreading of the shoes compresses the two groups of friction plates
 25 against the side walls of the followers. When the end wall of the follower 15 engages the plates 27, it moves them forwardly between the plates 28, the latter, however, first moving into contact with the end wall
 30 of the follower 16. The springs 31, 32, are compressed as the bar 29 moves inwardly.

If the force applied be sufficient the gear is finally compressed until the parts occupy
 35 the position shown in Fig. 2, further compression being prevented by the contact of the inner end of the follower 15 with the follower 16. Upon relief of the stresses which have caused the compression of the gear, the latter is restored to the position of
 40 Fig. 1, under the influence of the several springs. The wedge block 17 is first moved backward, relieving the outward pressure on the friction plates and permitting the shoes 19, 20 to recede. The bar 29 coming
 45 into engagement with the outer ends of the slots in the side walls of the follower carries this element back, and presently engaging the shoulders on the plates 27 carries back these elements. The plates 28 move
 50 backwardly under the influence of friction until their shoulders encounter the bar 30. As the springs 23, 24 expand pressure on the shoes 21, 22 is relieved, permitting them to recede from the wedge block 18.

55 Under the influence of draft stresses the action is the same as in buff, but in the opposite direction.

As the gear is compressed in either direction its resistance, due both to the springs
 60 and friction, is initially but slight and is gradually developed. As a consequence the light compressive forces applied in either direction are cushioned and the heavier shocks are substantially all absorbed. The
 65 release being effected by the springs 32, 33,

which may be very heavy, is certain but is suitably retarded, to avoid shock, by the follow up of the friction shoes under the influence of the springs 23, 24.

While the form and arrangement of the
 70 various elements of the gear as shown are preferred, both may be deviated from within the scope of the invention.

I claim as my invention—

1. In a draft gear, in combination, a pair
 75 of chambered followers, wedging elements in each follower adapted to develop outward lateral pressure, groups of intercalating friction plates interposed between such
 80 wedging elements and friction surfaces associated with the side walls of the followers, bars extending transversely through the followers, and springs interposed between the outer end portions of the bars.

2. In a draft gear, in combination, a pair
 85 of chambered followers, a central two-faced wedge associated with each follower, friction shoes having wedging faces cooperating with each face of each wedge, a group of intercalating friction plates interposed
 90 between the shoes at each side of the gear and a friction surface associated with the side walls of the followers, a bar extending transversely through each follower, and springs interposed between the projecting
 95 end portions of the bars.

3. In a draft gear, in combination, a pair
 100 of chambered followers each having an aperture in its transverse wall, a central two-faced wedge-block projecting through each aperture and engageable directly by a coupler, friction shoes having wedging faces cooperating with each face of each wedge, a group of intercalating friction plates interposed
 105 between the shoes at each side of the gear and a friction surface associated with the side walls of the followers, a bar extending transversely through each follower, and springs interposed between the projecting
 110 end portions of the bars.

4. In a draft gear, in combination, a pair
 115 of chambered followers, a central two-faced wedge associated with each follower, friction shoes having wedging faces cooperating with each face of each wedge, a group of intercalating friction plates interposed between the shoes at each side of the gear and a friction surface associated with the side walls of the followers, a bar extending
 120 transversely through each follower, springs interposed between the projecting end portions of the bars, and a spring interposed between the shoes at each end of the gear.

5. In a draft gear, in combination, a pair
 125 of opposed chambered casings, two groups of intercalating friction plates housed within the casings, wedging means interposed between the two groups of plates, a pair of bars extending transversely through the
 130 casings and engageable with the wedge

means to hold the elements thereof in co- operative relation, compression springs in- terposed between the end portions of the two bars, and means acting in opposition to the springs to spread the wedges. 5

6. In a draft gear, in combination, a pair of chambered casings, friction elements co- operating with the side and end walls there-

of, wedging elements for compressing the friction elements and comprising an exten- sion projecting through the end wall of each casing, means engageable with such exten- sions for spreading the wedges, and means for restoring the parts to normal condition after compression. 10

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