J. F. O'CONNOR.

TANDEM SPRING AND FRICTION DRAFT RIGGING.

APPLICATION FILED JULY 28, 1909.

966,234.

Patented Aug. 2, 1910.

2 SHEETS—SHEET 1.

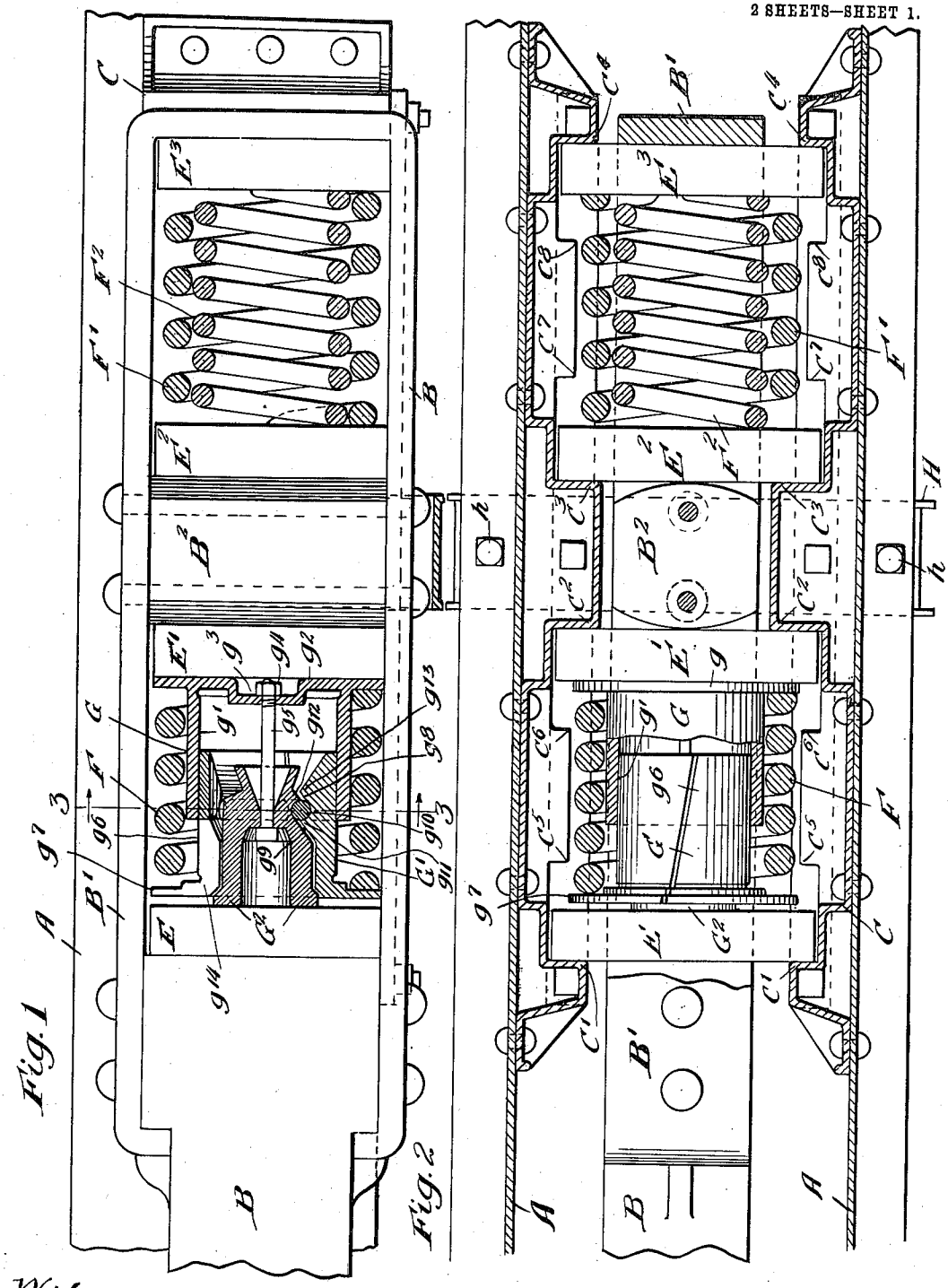

Fig. 1

Fig. 2

Witnesses:

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Fig. 3

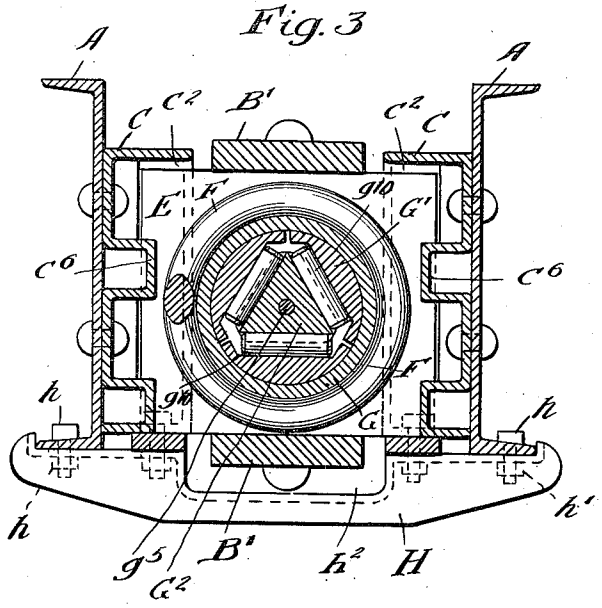


Fig. 4

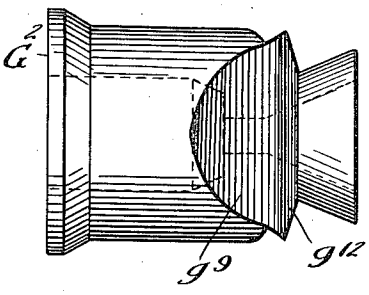


Fig. 5

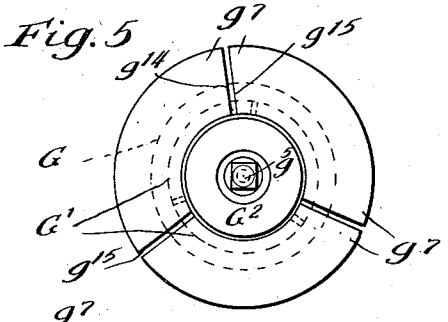


Fig. 6

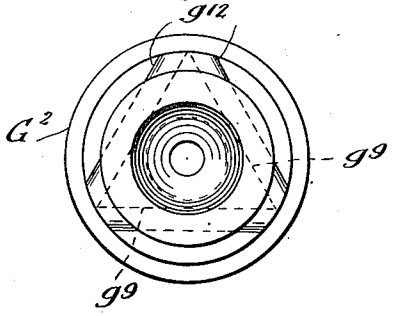
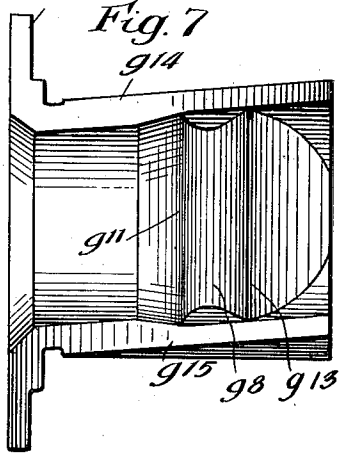


Fig. 7



Witnesses:

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UNITED STATES PATENT OFFICE.

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TANDEM-SPRING AND FRICTION DRAFT-RIGGING.

966,234. Specification of Letters Patent. Patented Aug. 2, 1910.

Application filed July 28, 1909. Serial No. 510,074.

To all whom it may concern:

Be it known that I, JOHN F. O'CONNOR, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Combined Tandem-Spring and Friction Draft-Rigging, of which the following is a specification.

My invention relates to draft rigging for railway cars.

The object of my invention is to provide a railway draft rigging of a simple, efficient and durable construction, which will possess at one and the same time the peculiar merits and advantages of the ordinary tandem spring draft rigging without its limitations or defects, and also the peculiar merits and advantages of a friction draft rigging without its limitations or defects, and in which the combined tandem spring and friction gear will not necessarily exceed in length that of the ordinary tandem spring gear, and in which the two tandem springs and the friction cushioning devices will all simultaneously act and coöperate to cushion both pulling and buffing shocks of the draw-bar and efficiently cushion both light and extremely heavy blows or shocks, and in which the friction cushioning mechanism will coöperate to prevent sudden and violent recoil of the powerful and simultaneously acting tandem springs, and in which the tandem springs will coact to insure certain and reliable release action.

My invention consists in the means I employ, and herein shown and described, for practically accomplishing this object or result, the same being more particularly specified in the claims.

In the accompanying drawing forming a part of this specification, Figure 1 is a side elevation, partly in longitudinal section, of a combined tandem spring and friction draft rigging embodying my invention. Fig. 2 is a plan view partly in horizontal section. Fig. 3 is a cross section on line 3—3 of Fig. 1. Fig. 4 is a detail plan view of the wedge member of the friction cushioning mechanism. Fig. 5 is an end view of the friction cushioning devices. Fig. 6 is an end view of the friction wedge and Fig. 7 is a detail elevation of one of the friction shoes.

In the drawing, A represents the draft sills or members of the car frame to which the draft rigging is directly applied, preferably rolled steel center sills, B the draw-bar, B^1 the draft yoke, provided with an abutment block B^2 for engagement with the two middle followers, C the draft lugs or stop members secured to the draft sills and having front, rear and intermediate stop shoulders C^1 C^2 C^3 C^4 for the followers E E^1 E^2 E^3 to abut against, and also preferably supplemental stops or shoulders C^5 C^6 C^7 C^8 to limit the movement of the followers and the compression of the springs. All of these parts are or may be of any suitable or standard tandem spring draft rigging construction.

F F^1 are tandem arranged springs, the former between the two foremost followers and the latter between the two rearmost followers and F^2 is a supplemental spring of smaller diameter within one of the tandem springs F^1.

G is a friction shell or cylinder interposed between the followers E E^1 and fitting within the spring F, and having at one end an external rim or flange g for one end of the spring F to react against, and having an internal longitudinal friction face g^1 parallel with the draw-bar. The head or end g^2 of the friction shell G is provided with a countersink recess g^3 to accommodate the nut g^4 of the connecting rod g^5 of the friction cushioning mechanism.

G^1 are coöperating segmental friction shoes, preferably three in number fitting within the friction shell G, and having external friction faces g^6 in sliding frictional engagement with the internal friction face g^1 of the friction shell G, and each provided with an external flange or segmental rim g^7 against which the other end of the spring F abuts. The segmental friction shoes G also each have an inner inclined or wedge face g^8 parallel and corresponding to one of the wedge faces g^9 of the three-faced or pyramidal wedge G^2 by which the friction shoes are spread or forced into snug frictional engagement with the friction shell G. Anti-friction rollers g^{10} are interposed between the wedge faces of the friction shoes G^1 and of the pyramidal wedge G^2, said shoes and wedge being also provided with shoulders g^{11} g^{12} to keep the rollers in position, and the shoes having also shoulders g^{13} to keep the rollers from slipping out of place lengthwise. The connecting rod g^5 between the wedge G^2 and the friction shell G serves not

only to hold all of the parts or devices of the friction cushioning mechanism assembled, but also to maintain the spring F under an initial tension or compression.

The three segmental friction shoes G^1 are preferably oblique, that is to say, their parallel meeting edges g^{14} g^{15} extend at an angle to the axis of the longitudinally movable friction shell G, so that as the friction shoes G^1 reciprocate within said shell G, the meeting edges of the shoes will not produce any unevenness of wear on the internal friction face of the cylinder G as they would tend to do if the meeting edges of the friction shoes were parallel with the axis of the cylinder instead of inclined thereto.

H is the removable tie-plate or guide secured to the draft sills A by short bolts h having threaded nuts h^1. The tie-plate H is furnished with a longitudinal channel h^2 to accommodate the lower member of the draft yoke B^1.

In operation, under either pulling or buffing blows of the draw-bar, the two tandem springs F F^1 and the supplemental spring F^2 within the spring F^1 and the cushioning mechanism or devices G G^1 all simultaneously act and coöperate to cushion the draw-bar movement, and when the pressure of the draw-bar against the cushioning springs and devices is relieved, the friction cushioning devices G G^1 coöperate to prevent sudden, violent or injurious recoil, and the springs coact with the friction shell, friction shoes, wedge and anti-friction rollers between the wedge and shoes to insure certain and reliable release action and thus to enable the draft rigging to properly cushion successive blows of the draw-bar thereon.

I claim:—

1. In a draft rigging, the combination with the draw-bar, draft yoke, stop members and front, rear and intermediate followers, the draft yoke having an abutment to engage the intermediate followers, of tandem arranged springs, a supplemental spring within one of the tandem springs and a friction cushioning mechanism within the other tandem spring comprising a friction shell having an external rim against which one end of said last mentioned spring reacts, and a series of segmental friction shoes within said friction shell, and having each an external flange against which the other end of said spring reacts, and provided each with an inner wedge face, a pyramidal wedge and anti-friction rollers interposed between said wedge and said friction shoes, substantially as specified.

2. A combined tandem spring and friction draft rigging comprising in coöperative combination, a draw-bar, draft yoke having an abutment for engagement with intermediate followers, stop members, front, rear and intermediate followers, tandem springs, and a friction cushioning mechanism within one of said springs having a friction shell with an internal cylindrical friction face and an external rim to engage one end of said spring, and segmental friction shoes having external cylindrical friction faces and external shoulders to engage the other end of said spring and a central wedge acting to spread outwardly said friction shoes, substantially as specified.

3. A combined tandem spring and friction draft rigging comprising in combination tandem springs, two pairs of followers, a friction shell, friction shoes within the shell and a central wedge for spreading the shoes, said friction shell, shoes and wedge extending between one pair of said followers and within one of said springs, one of said springs reacting at one end against said friction shell and at the other end against the friction shoes, and the other of said springs being between the other pair of followers and reacting thereagainst, both said springs and said friction shell and shoes all coöperating to cushion both pulling and buffing strains, substantially as specified.

JOHN F. O'CONNOR.

Witnesses:
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H. M. MUNDAY.