J. F. O'CONNOR.

FRICTION GEAR FOR RAILWAY DRAFT RIGGINGS.

APPLICATION FILED FEB. 26, 1917.

1,288,970.

Patented Dec. 24, 1918.

3 SHEETS—SHEET 1.

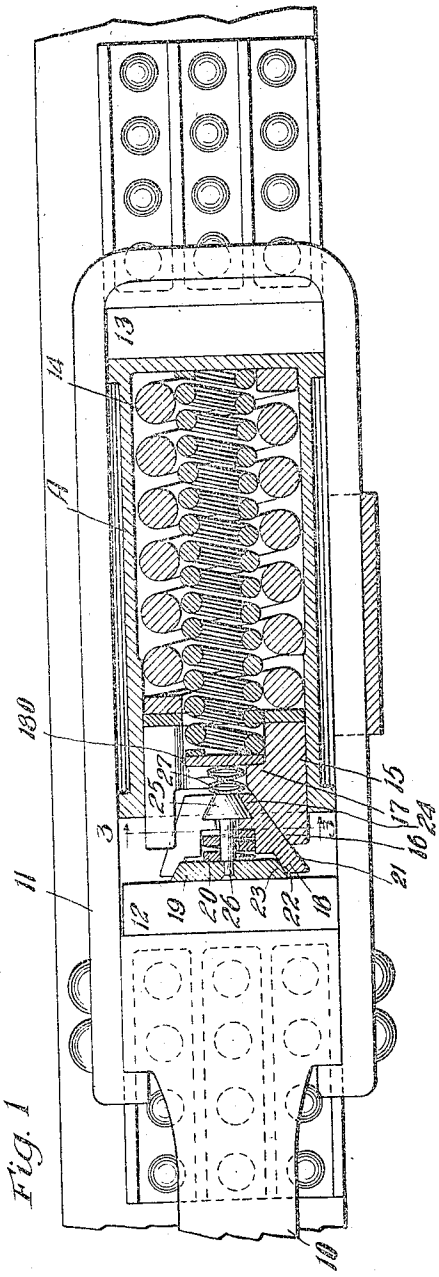


Fig. 1

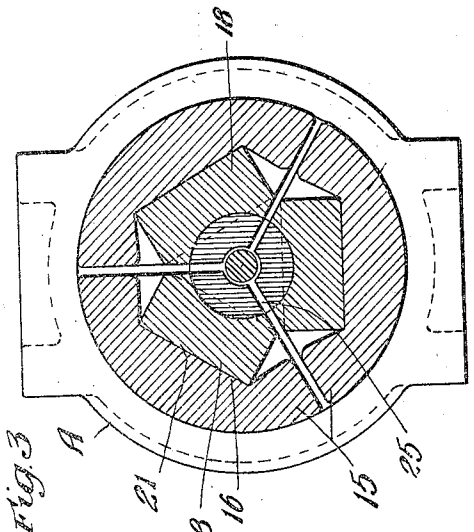


Fig. 3

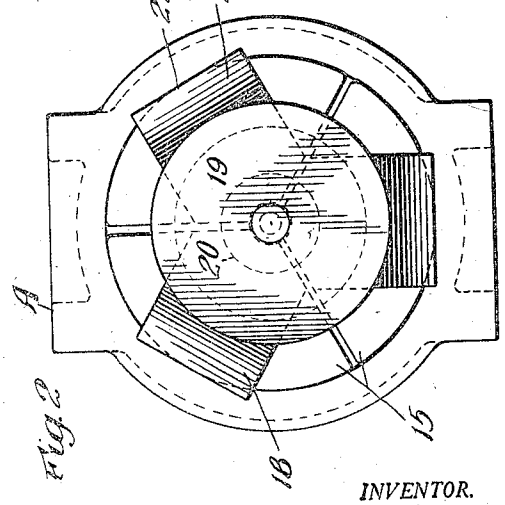


Fig. 2

WITNESSES:

Wm. Geiger

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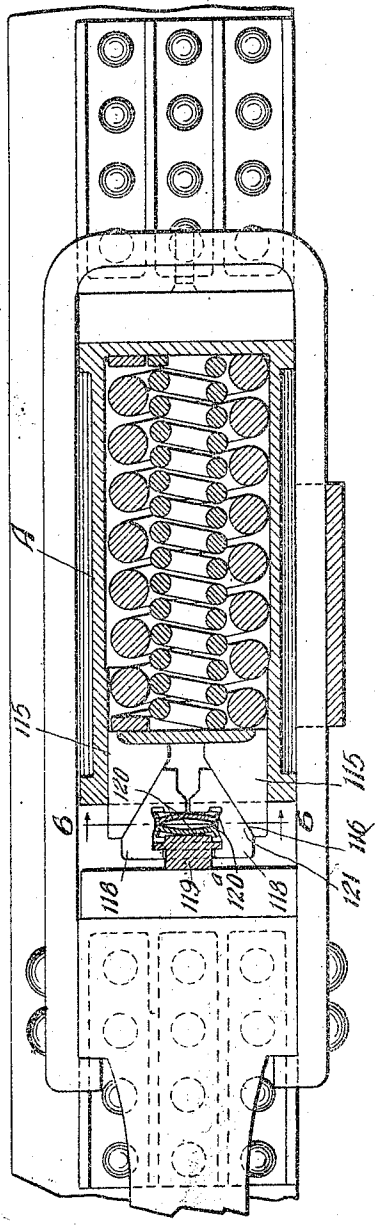


Fig. 4

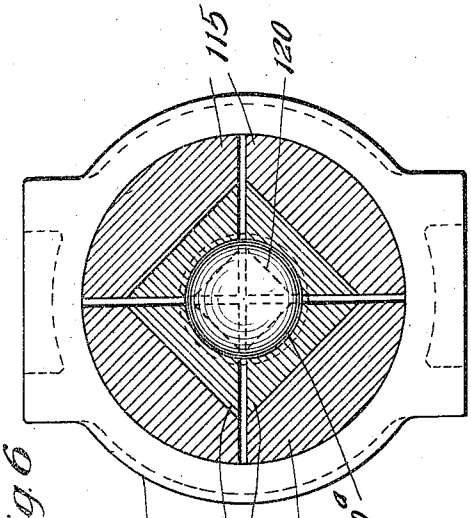


Fig. 6

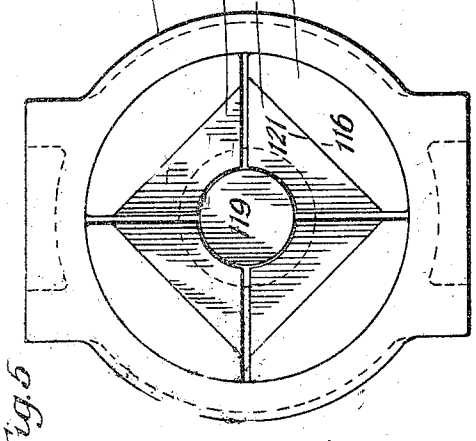


Fig. 5

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3 SHEETS—SHEET 3.

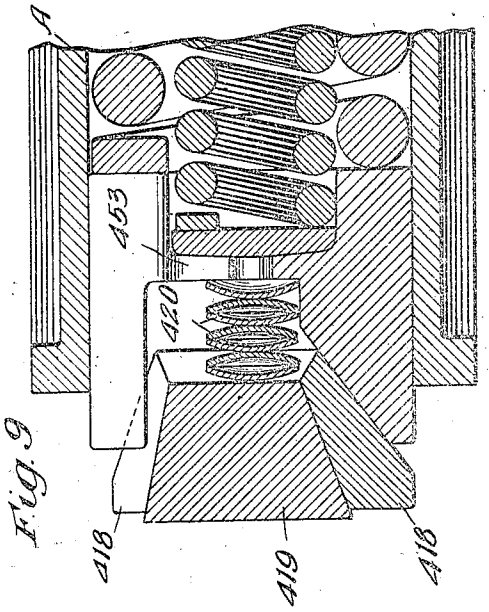


Fig. 9

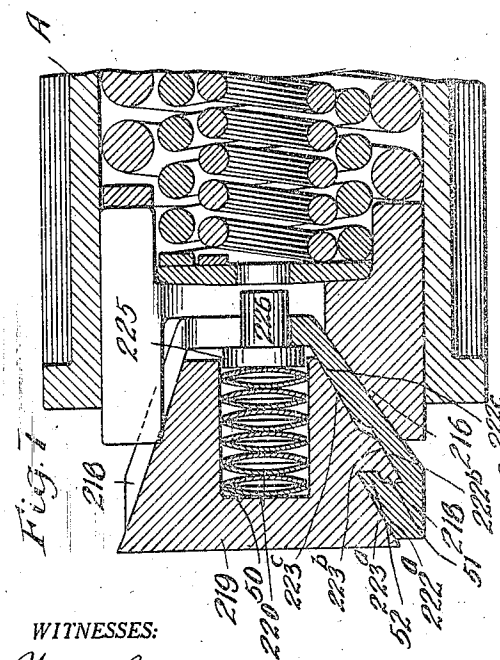


Fig. 7

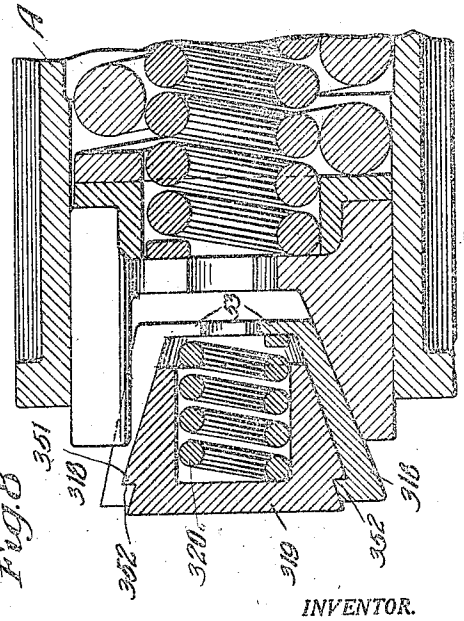


Fig. 8

WITNESSES:

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UNITED STATES PATENT OFFICE.

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FRICTION-GEAR FOR RAILWAY DRAFT-RIGGINGS.

1,288,970. Specification of Letters Patent. Patented Dec. 24, 1918.

Application filed February 26, 1917. Serial No. 151,007.

To all whom it may concern:

Be it known that I, JOHN F. O'CONNOR, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Friction-Gears for Railway Draft-Riggings, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

This invention relates to improvements in friction gears for railway draft riggings.

One object of the invention is to provide a friction gear for railway draft riggings having high capacity and certain release and wherein a constant angle wedge is employed.

Another and more specific object of the invention is to provide a friction gear of the type above indicated wherein is employed a self-contained expanding wedge.

In the drawing forming a part of this specification, Figure 1 is a longitudinal vertical section of a draft rigging, showing my improvements in connection therewith. Fig. 2 is a front end elevation of the friction gear proper, on an enlarged scale. Fig. 3 is a vertical transverse section of the friction gear illustrated in Fig. 1 and taken on the line 3—3 thereof. Figs. 4, 5 and 6 are views corresponding respectively to Figs. 1, 2 and 3, but illustrating different embodiments of the invention, Fig. 6 being taken on the line 6—6 of Fig. 4.

Figs. 7, 8 and 9 are enlarged detail sectional views illustrating three other embodiments of my invention.

Referring first to the construction illustrated in Figs. 1, 2 and 3, 10 denotes a draw bar to which is secured a yoke 11, the friction gear proper being confined within the yoke and between front and rear followers 12 and 13, said followers coöperating with stops on the draft sills in the usual manner.

My improved friction gear, as shown, comprises a combined friction shell and spring casing A within which is confined the main spring 14, consisting of an outer heavy coil and an inner lighter coil. Coöperable with the friction shell proper of the casing A, is a circularly arranged series of friction shoes 15, each of the latter having an interior wedge face 16 at its forward end and an inwardly extending shoulder 17, against which bears a small spring follower 180, at the front end of the inner coil of the main spring. Coöperable with the friction shoes for forcing the latter radially against the friction shell, is an improved self-contained expanding wedge. The latter consists of a series of outer wedge elements 18, one for each shoe, a central pressure transmitting plug 19 of wedge shape, and a heavy expanding spring 20 confined within and carried by the wedge proper. Each of the outer wedge elements 18 is provided with an outer wedge face 21 that co-acts with the adjacent wedge face 16 of the corresponding shoe and on its inner face, each wedge element 18 is provided at its outer end with another wedge face 22 which co-acts with the corresponding wedge faces 23 on the sides of the plug 19. The wedge elements 18 are also interiorly recessed to accommodate the releasing spring 20, as clearly shown in Fig. 1. In order to obtain a balanced spreading pressure on the wedge elements 18, the latter are provided near their inner ends with additional wedge faces 24 with which coöperates conical plug 25 at the inner end of a stud 26 which passes through the spring 20 and is secured to and moves in unison with the pressure plug 19. As an additional means for releasing the wedge, a plurality of disk springs 27 are interposed between the inner end of the wedge proper and the spring follower 17.

Upon buffing movement, it is apparent that pressure will be transmitted from the front follower 12 to the plug 19 and the latter in turn will act directly against the outer ends of the expansible wedge elements 18 and through the plug 25 against the inner ends of the wedge elements 18. From the wedge elements 18, the pressure is transmitted to the shoes through the wedge faces 16 and 21, thus maintaining a constant wedge angle between the wedge proper and the friction shoes. Upon release or removal of the pressure against the parts, it is apparent that the spring 20 will exert outward pressure on the plug 19 with respect to the wedge elements 18, thus permitting the latter to collapse sufficiently to be disengaged from the friction shoes and fully release the gear. During this release movement, it is also apparent that the spring disks 27 will assist the spring 20 in collapsing the wedge.

In the construction illustrated in Figs. 4, 5 and 6, the arrangement of draw bar, followers, yoke, friction shell and spring is

similar to that of the structure illustrated in Figs. 1, 2 and 3, and need not here be detailed. Coöperable with the friction shell is a circularly arranged series of friction shoes 115, preferably four in number, each of which is provided on its inner face with a wedge surface 116. Coöperable with the friction shoes is a self-contained expanding wedge which, in this instance, comprises four outer wedge elements 118—118 each having an outer wedge face 121 coöperable with the corresponding wedge face of a friction shoe, a pressure transmitting plug 119 fitting within the elements 118 and slidable with respect thereto, and an expansible spring wedge consisting of two oppositely disposed dished spring disks 120—120. The disks 120 are provided around their peripheries with flared flanges 120[a] which engage corresponding interior surfaces on the wedge elements 118.

The operation of the construction illustrated in Figs. 4, 5 and 6 is as follows: Upon inward movement of the draw bar, pressure is transmitted from the front follower to the plug 119. As the latter moves inwardly, the dished spring disks 120 tend to flatten out with the result that the peripheries or flanges 120 thereof are expanded radially, thus forcing the wedge elements 118 outwardly against the shoes 115. In this construction it will be apparent that a constant angle is also maintained between the wedge proper and the friction shoes while at the same time the wedge is expansible and collapsible and contains the spring means therewithin for effecting its own collapse. This release is effected, after pressure is removed from the plug 119, by the disks 120 returning to their normal condition which forces the plug 119 outwardly with respect to the elements 118 and at the same time contracts the circumference of the disks 120 and permits the wedge elements 118 to collapse.

In the construction illustrated in Fig. 7, the arrangement of friction shell, shoes and main spring is the same as in the preceding constructions. Each of the friction shoes is provided with an inner wedge face 216 with which coöperates the self-contained expansible wedge. The latter, as shown, comprises a plurality of outer wedge elements 218, one for each shoe, each of said elements being provided on its inner face with three wedge surfaces 222[a], 222[b], and 222[c]. Coöperable with the last named wedge surfaces are corresponding wedge surfaces 223[a], 223[b], and 223[c] formed on the outer surface of a central wedge plug 219. The plug 219 is centrally recessed as indicated at 50, to accommodate a plurality of disk springs 220, the latter bearing at their outer ends against the plug 219 and at their inner ends against a button 225 that has an extension 226 passing between the inner ends of the wedge elements 218. To prevent accidental separation of the wedge block 219 and the wedge elements 218, said parts are provided with inter-locking shoulders 51 and 52. The operation of this gear will be understood from the preceding description of the construction illustrated in Fig. 1.

In the arrangement shown in Fig. 8, the friction shell, main spring and friction shoes are the same as the corresponding parts shown in Fig. 7. In this construction, however, the expansible wedge employs a coil spring 320 which is seated at one end against the inner wedge plug 319 and at its other end against inwardly extending flanges 53 on the inner ends of the wedge elements 318. Coöperating shoulders 351 and 352 are provided on the wedge elements and central plug to prevent separation of the parts, similar to the inter-locking shoulders provided in the construction shown in Fig. 7.

In the arrangement shown in Fig. 9, the friction shell, friction shoes, and main spring are similar to the corresponding parts in the other views. In this arrangement, the wedge proper consists of a series of outer wedge elements 418, one for each friction shoe and coöperable therewith, a central wedge plug 419 coöperable with all the elements 418, and a releasing spring in the form of a plurality of dished plates 420, the latter reacting at their outer end against the plug 419 and at their inner end against inwardly extended flanges 453 formed on the friction shoes.

I claim:

1. In a friction gear, the combination with a friction shell, main spring, friction shoes coöperable with the friction shell and having inner wedge faces, of an expanding wedge coöperable with said shoes, said wedge having self-releasing means contained therewithin reacting against portions of said wedge only.

2. In a friction gear, the combination with a friction shell, main spring, friction shoes coöperable with the friction shell and having inner wedge faces, of a wedge coöperable with said shoes, said wedge comprising a plurality of independent outer wedge elements, an interior pressure block, and spring means for forcing the block outwardly with respect to the wedge elements during release and reacting against said block and outer wedge elements.

3. In a friction gear, the combination with a friction shell, main spring, friction shoes coöperable with the friction shell and having inner wedge faces, of a wedge coöperable with said shoes, the wedge comprising a plurality of independent, outer wedge elements each having an outer wedge face cooperable with the wedge face of a friction shoe and an inner wedge face, and a wedge

shaped pressure block within said elements coöperable with said inner wedge faces thereof.

4. In a friction gear, the combination with a friction shell, main spring, friction shoes coöperable with the friction shell and having inner wedge faces, of a wedge coöperable with said shoes, the wedge comprising a plurality of independent, outer wedge elements each having an outer wedge face coöperable with the wedge face of a friction shoe and an inner wedge face, a wedge shaped pressure block within said elements coöperable with said inner wedge faces thereof, and spring means contained within the wedge for effecting its release.

5. In a friction gear, the combination with a friction shell, main spring, friction shoes coöperable with the friction shell and having inner wedge faces, of a wedge coöperable with said shoes, said wedge comprising a plurality of independent outer wedge elements, an interior pressure block, and spring means confined within the wedge against which said pressure block acts directly during actuation of the gear.

6. In a friction gear, the combination with a friction shell, main spring, friction shoes coöperable with the friction shell and having inner wedge faces, of a wedge coöperable with said shoes, said wedge comprising a plurality of independent outer wedge elements, one for each of said shoes, and an interior pressure block, and spring means for forcing said block outwardly with respect to the wedge elements during release, said spring means being contained within the wedge.

7. In a friction gear, the combination with a friction shell, friction shoes having wedge faces coöperable with said shell, and a spring for resisting movement of the shoes, of a self-contained releasing wedge coöperable with said shoes, said wedge comprising a plurality of outer wedge elements acting directly against the friction shoes, an inner wedge plug for expanding the wedge elements, and a spring reacting against said plug at one end and against the wedge elements at the other end.

In witness that I claim the foregoing I have hereunto subscribed my name this 15th day of Feb. 1917.

JOHN F. O'CONNOR.