

DRAFT GEAR.

1,237,756.

Patented Aug. 21, 1917.

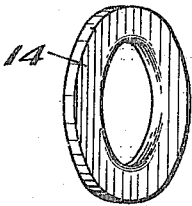
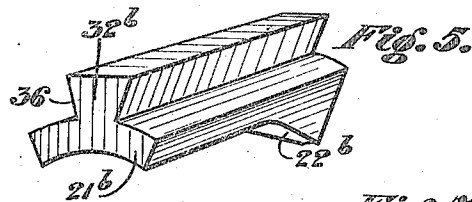
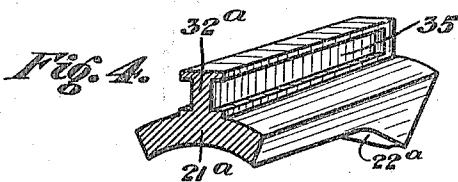
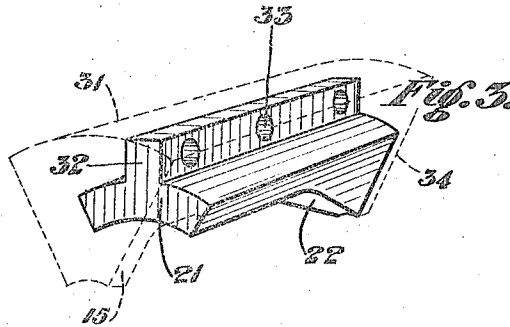
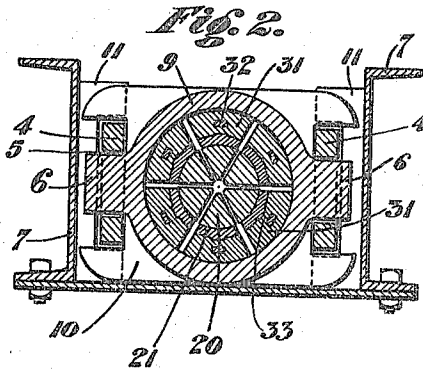
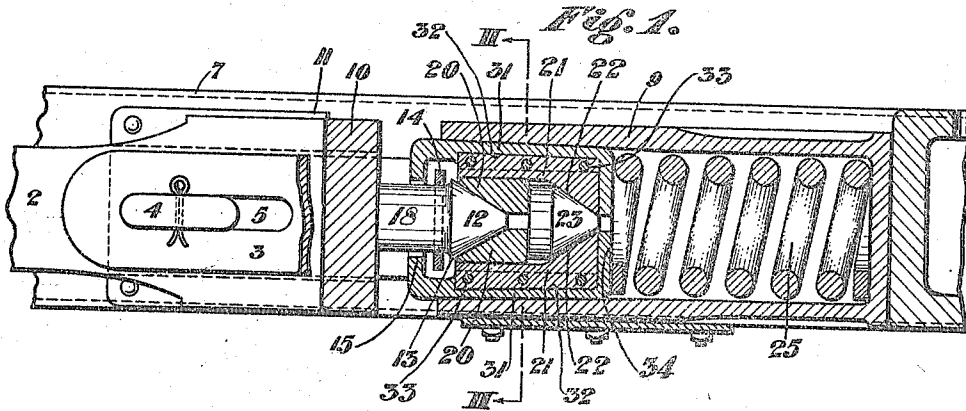
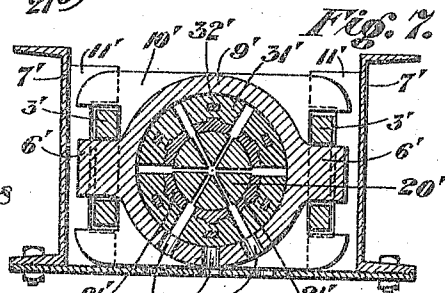
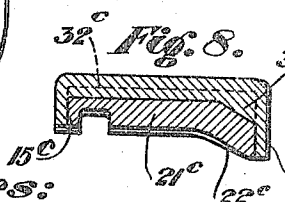


Fig. 6.

32^c Fig. 8.



Witnesses:

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UNITED STATES PATENT OFFICE.

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DRAFT-GEAR.

1,237,756.

Specification of Letters Patent.

Patented Aug. 21, 1917.

Application filed September 16, 1916. Serial No. 120,495.

To all whom it may concern:

Be it known that I, JOHN F. COURSON, a citizen of the United States, residing at Pitcairn, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Draft-Gears, of which the following is a specification.

My invention relates to improvements in friction draft gears for railway cars, etc., and has for its object to provide, in a draft gear utilizing an assembled series of friction-creating shoes within an inclosing casing or cylinder, with means for generating a high degree of frictional engagement between the exterior of the friction-creating shoes and the interior of the casing or cylinder, within their limited range of movement, an improved friction shoe.

Generally stated, the invention consists in providing friction shoes adapted for expansion and longitudinal movement within a casing or cylinder having portions of their body composed of an outer contacting abrasive or friction-creating material, different from, but adapted to cooperate in frictional resistance with, the adjustable base of the shoe itself.

In the drawings illustrating the invention, I have shown it as applied to a type of construction of draft gear similar to that illustrated and described in my co-pending application, Serial No. 66,935. It will be understood, however, that the invention is not limited in its use to any particular form or type of gear.

In the drawings, showing the application of the invention to such a gear,—

Figure 1 is a longitudinal vertical sectional view through a complete gear as assembled, the parts being shown in extended position.

Fig. 2 is a cross sectional view on the line II. II. of Fig. 1.

Figs. 3, 4 and 5 inclusive, are detail perspective views of segmental sections comprising friction shoe units, and showing various forms providing for the insertion thereon of the friction material, indicated in Fig. 3 in dotted lines.

Fig. 6 is a detail perspective view of the plunger ring.

Fig. 7 is a view similar to Fig. 2, showing a modified construction.

Fig. 8 is a sectional detail view showing a modified construction of friction shoe.

In order that the construction and operation of the form of gear illustrated in Figs. 1 and 2 may be understood, it will be somewhat briefly described.

In such gear, 2 represents the drawbar of a coupler connected with the drawbars or links 3 by a transverse bolt or key 4 which extends through slots 5 in the front portion of links 3 and through slots in the center sills 7 of the car framing at each side.

Links 3 extend rearwardly and engage the casing 9 at each side between the center sills by any suitable connecting mechanism, as lugs 6. (Fig. 2.)

A follower 10 bears forwardly against suitable front stops 11 of the center sills 7, and is supported otherwise by any suitable or necessary means providing for easy assemblage or removal.

A central wedge block or buffing pressure bar 18 bears directly against the rear central portion of follower 10 by its front end, and said wedge block is provided at its other end with a wedging terminal 12 of coniform or other suitable construction, the face of which corresponds in degree of slope to the inner faces of expanding wedges 20.

Said contacting faces taper inwardly toward the longitudinal center of the gear at such an angle as to produce a maximum expansion with resulting free release.

Wedges or wedge blocks 20 bear outwardly against the inner faces of a plurality of segmental shaped friction shoe bases 21 arranged in an annular series within the casing 9 and adapted to frictionally engage the inner, preferably tapered, surface thereof by their outer attached friction shoes, hereinafter described. Said shoe bases 21 are provided at their inner portions with inwardly disposed wedge faces 22 for co-action with the corresponding wedge faces of an inner central wedge 23.

Said wedge 23 is provided at its inner terminal portion with outer co-acting wedge faces adapted to engage said faces 22 of the friction shoe members, whereby to expand said member in unison with the expanding action of wedges 20.

Buffing spring mechanism of any suitable or preferred construction, as a main spring 25, is interposed between the rearmost inner ends 34 of the friction shoes 31 mounted on bases 21, and the inner end of casing 9, for the purpose of opposing inward move-

ment of the friction mechanism and of retracting it to normal position upon cessation of either buffing or pulling strains.

For the purpose of positively releasing the friction shoes from engagement with the casing upon outward movement of plunger 18 the central wedge 12 is provided with a peripherally extending flange or lip 13 and a ring 14 is interposed between such lip and the inwardly extending flanges or lugs 15 of friction shoes 31, which are annularly arranged within the casing, as clearly shown in Fig. 2, and fixedly connected to the several shoe bases 21.

Ring 14, being loosely mounted around plunger 18 and between lip 13 and flanges 15 acts to maintain the parts in their relative operative position, allowing for ample necessary movement, effecting outward pressure by the ring 14 against flanges 15 when plunger 18 is retracted to release the parts, and at the same time preventing removal or displacement of the parts from operative position.

The operation of the gear will be readily understood from the foregoing description.

The expanding action of the wedges thrusts the outer surfaces of friction shoes 31 into forcible close contact with the cylindrical interior of casing 9, creating a high degree of frictional engagement therewith, and a resulting somewhat rapid wear, especially of the friction shoes.

Under the heavy strains it is ordinarily necessary to use a metal for the friction shoes having a high degree of strength, rigidity, and endurance, and at an accompanying considerable cost, if made in one piece of metal.

I have found in practice that the best results in producing frictional action in a gear of this type are by engagement between the faces of metal of different kinds, and furthermore, have found it necessary to make the shell or cylinder 9 of a metal having a high tensile strength in order to withstand the enormous strains of service.

For the purpose of bringing a large portion of the frictional engagement between the operative parts between metals of different kinds, and to reduce the cost, I have therefore constructed the friction shoe bases 21 in such a form as to admit of embodiment with them of a substantially homogeneous or otherwise incorporated block of metal adapted to present a frictional surface to the inner face of the cylinder, and to provide for all of the wear in action.

Referring to the construction of Figs. 1, 2 and 3, which show one form of such shoe base 21, and its associated shoe portion, the base 21 is provided along its central outer portion with a ridge 32 having a plurality of transverse openings 33, upon and around which is cast the block 31 of cast iron or

other suitable material. In the case of cast iron, the molten metal is preferably poured around the ridge 32 and over the base 21 in connection with a suitable surrounding mold, whereby to shape or form its exterior surface on the same contour and preferably coincident with the curved or cylindrical face of the segmental shaped shoe 21, whereby to provide a continuous curved exterior surface.

At its forward end the segmental shoe is so shaped as to provide the inwardly extending lip 15 above referred to and is also extended inwardly around the rear end of base 21 providing the terminal inclosing end wall 34 against which the spring 25 bears. In the casting operation, the metal engages openings 33 of ridge 32, and by such construction the outer friction shoe member is very intimately associated with the inner wedge-expanded base, and forms a practically integral portion thereof.

The side walls of the central ridge 32^a or 32^b may be undercut, if desired, as indicated at 35, Fig. 4, or in dovetail form, as at 36, Fig. 5, whereby to provide an anchoring hold for the cast-in metal, as will be readily understood, to insure its fixed engagement with the shoe base.

With either arrangement a very intimate binding and reinforcing connection is provided, and the friction shoe portions are of sufficient body portion to insure long continued use.

In Fig. 7, in which the same parts already described are shown and indicated by corresponding numerals, primed, I show a construction in which the casing 9' is provided at intervals with perforating openings 37 adapted to release any accumulation of cuttings, dirt, etc., and it will be observed that radial spaces are provided between the segments, giving ample clearance for the same purpose. Openings for the same purpose may be also made through the lower supporting framework of the gear.

As shown in Fig. 8 the base 21^c is itself provided with an integral inwardly extending lip or flange 15^c adapted to be engaged by ring 14 when the gear is assembled, thus relieving the shoe itself of any strain in releasing. The shoe may also be reinforced by filling in its rear corner portion as indicated at 38, the base 21^c being correspondingly beveled off, avoiding a right angle corner without weakening the base itself in any way.

What I claim is:

1. A segmental-shaped, partly cylindrical friction-creating shoe for draft gears consisting of a base adapted to be forced laterally toward the interior cylindrical surface of a confining casing and provided with a central anchoring rib, and an embracing block of metal cast around the outer portion

of said base and inclosing its end portions, outer portion, and said rib.

2. A segmental-shaped, partly cylindrical friction-creating shoe for draft gears consisting of a base adapted to be forced laterally toward the interior cylindrical surface of a confining casing and provided with a central anchoring rib, and an embracing block of metal cast around the outer portion of said base and inclosing its end portions, outer portion, and said rib, said rib having recessed portions for coöperative engagement with the metal of the outer shoe portion.

3. In combination, a segmental-shaped, partly cylindrical draft gear friction shoe base having on its outer portion a longitudinal recessed rib, and an outer surrounding shoe of cast metal covering and embracing the face, end portions, and said rib, and provided with an outer curved face adapted to engage the inner face of an inclosing casing.

4. In combination, a segmental shaped draft gear friction shoe base having on its outer portion a longitudinal recessed rib, and an outer surrounding shoe of cast metal covering and embracing the face and end portions of the base and said rib and providing an inwardly extending flange at one end, and having an outer curved face adapted to engage the inner face of an inclosing casing.

5. In combination, a segmental shaped draft gear friction shoe base having on its outer portion a longitudinal recessed rib and at one end an inwardly extending flange, and an outer surrounding shoe of cast metal covering and embracing the face and end portions of the base and said rib, and having an outer curved face adapted to engage the inner face of an inclosing casing.

6. In a draft gear, in combination with

a casing, a series of segmental shaped friction shoes therein each provided at one end with an inwardly extending flange, interior expanding wedge mechanism operable to distend the friction shoes, and a central wedge having a plunger bar and a laterally extending lip; a ring loosely engaging the plunger bar between the friction shoe flanges and the lip of the expanding wedge.

7. In combination, a shoe for draft gears consisting of a base adapted to be forced laterally toward the interior cylindrical surface of a confining casing and having an outer anchoring portion and an outermost shoe of friction creating material fixedly engaging said anchoring portion and provided with a partly cylindrical face adapted to engage the surface of the cylinder.

8. In combination, a shoe for draft gears consisting of a base adapted to be forced laterally toward the interior cylindrical surface of a confining casing and having an outer anchoring portion and an outermost cast-on block of friction creating material fixedly engaging said anchoring portion and provided with a partly cylindrical face adapted to engage the surface of the cylinder.

9. In combination, a shoe for draft gears consisting of a base adapted to be forced laterally toward the interior cylindrical surface of a confining casing and having an outer anchoring portion, and an outermost shoe of cast metal covering and fixedly engaging said anchoring portion and provided with a partly cylindrical face adapted to engage the surface of the cylinder.

In testimony whereof I hereunto affix my signature in the presence of two witnesses.

JOHN F. COURSON.

Witnesses:

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C. M. CLARKE.