J. F. COURSON.

DRAFT GEAR.

APPLICATION FILED MAR. 12, 1918.

1,337,003.

Patented Apr. 13, 1920.

2 SHEETS—SHEET 1.

Fig. 1.

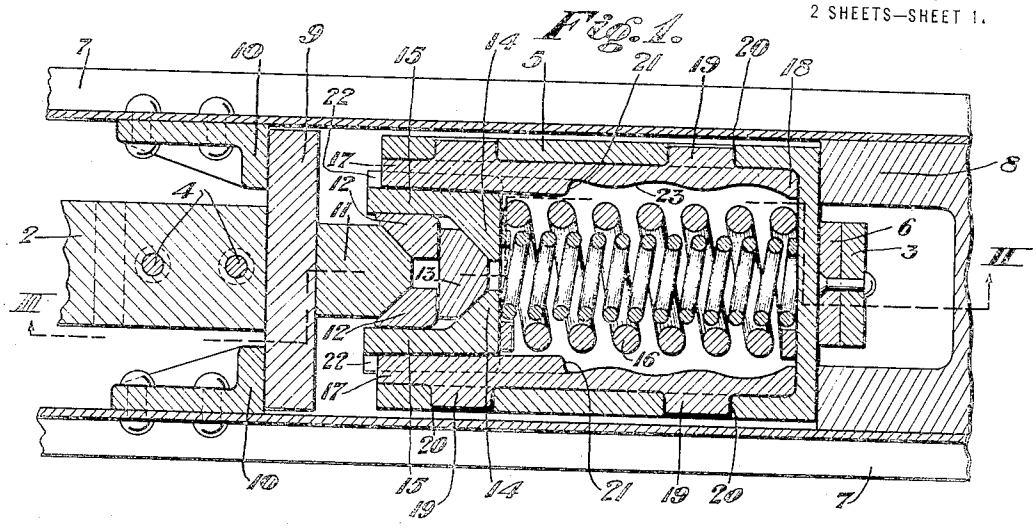


Fig. 2.

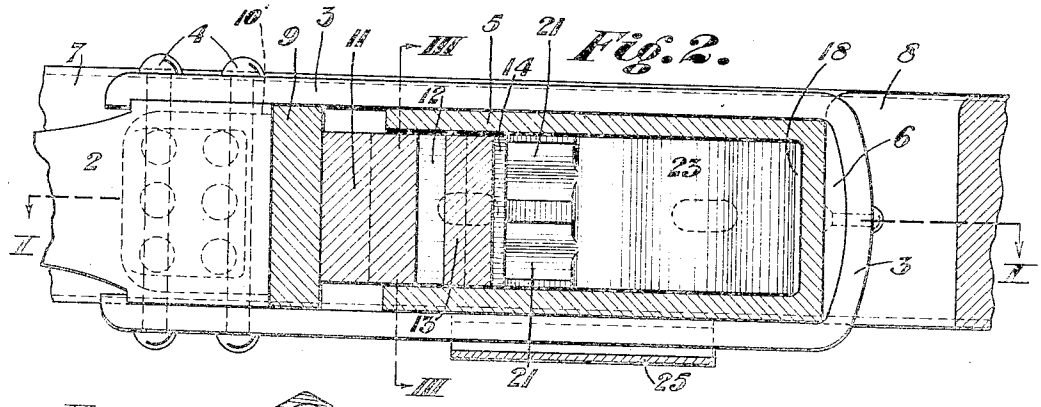


Fig. 4.

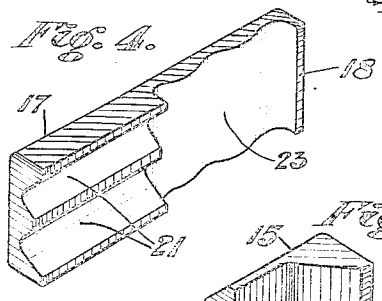


Fig. 5.

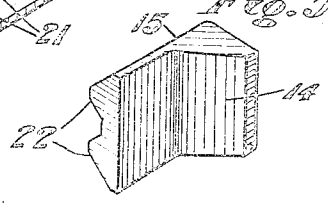


Fig. 3.

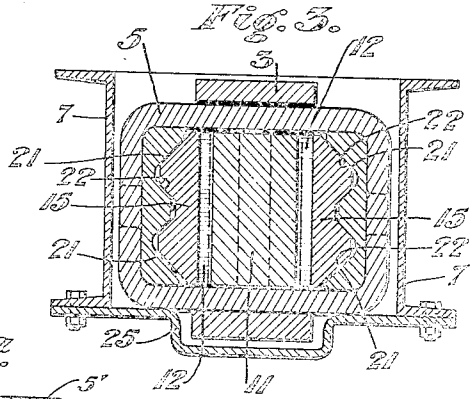
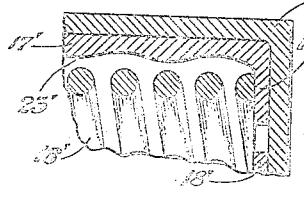


Fig. 1a.



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2 SHEETS—SHEET 2.

Fig. 6.

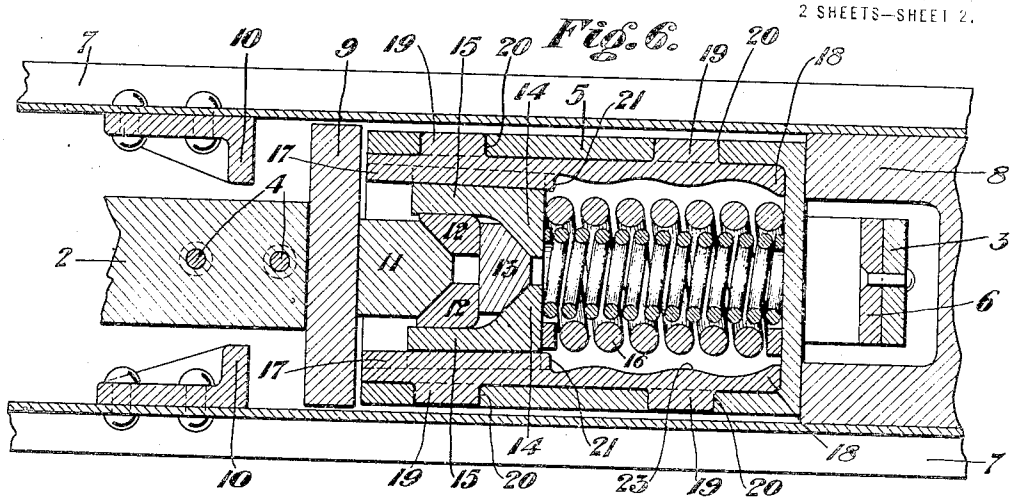


Fig. 7.

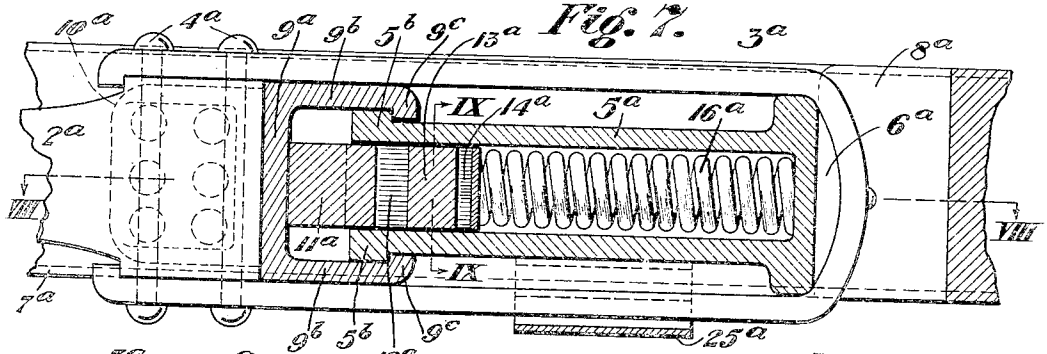


Fig. 8.

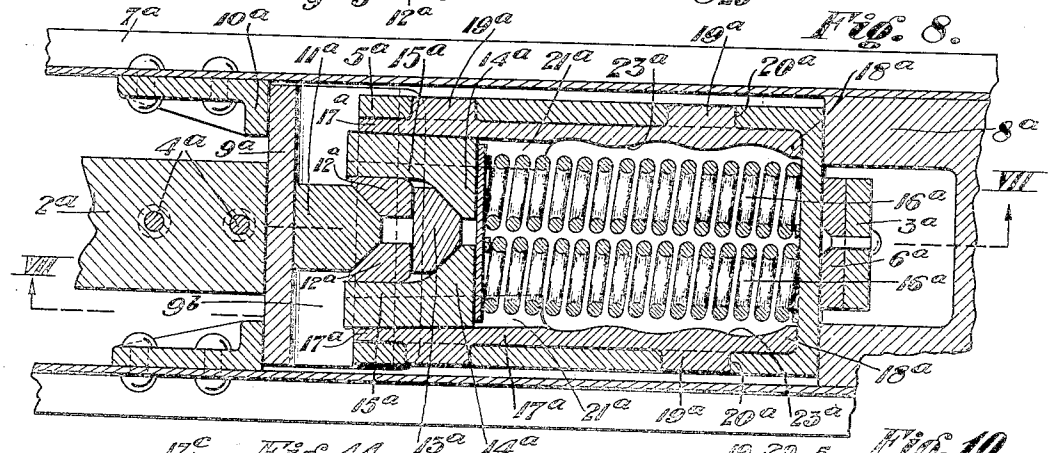


Fig. 11.

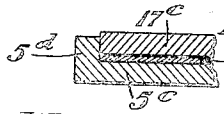


Fig. 10.

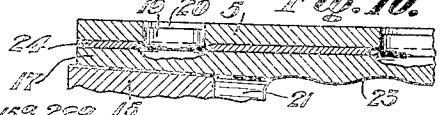
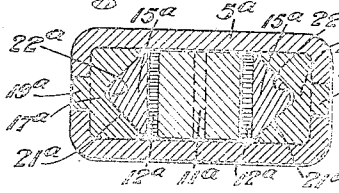


Fig. 9.



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UNITED STATES PATENT OFFICE.

JOHN F. COURSON, OF PITCAIRN, PENNSYLVANIA.

DRAFT-GEAR.

1,337,003. Specification of Letters Patent. Patented Apr. 13, 1920.

Application filed March 12, 1918. Serial No. 222,023.

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 consists in an improvement in draft gears of the general class utilizing springs and friction shoes in connection with centrally arranged expanding wedge mechanism operable upon buffing or pulling to effect resistance to such strains through the mechanism inclosed within and embracing cylinder or casing.

The present construction has in view to provide in a gear of this type a construction adapted to be mounted within the usual or any standard car framing, utilizing the maximum available cross sectional area for the purpose of providing ample frictional resistance areas between the relatively stationary and movable elements, dependent somewhat upon the generally rectangular form of the gear as a whole, and especially to provide in a friction gear of this type strong, simple and efficient wearing elements within the casing capable of adjustment or substitution when worn. Also, to so construct the gear as to provide ample resistance to the varying shocks incident to car service.

Preferred embodiments of the invention are illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal horizontal sectional view through the complete gear as assembled, the parts being shown in normal extended position as indicated by the section line I—I of Fig. 2;

Fig. 1ª is a sectional detail view showing a modified mounting of the wearing shoe terminals;

Fig. 2 is a corresponding vertical sectional view indicated by the line II—II of Fig. 1;

Fig. 3 is a cross sectional view indicated by the line III—III of Fig. 2;

Fig. 4 is a perspective detail view of one of the removable wearing shoes for the casing;

Fig. 5 is a similar detail view of one of the relatively movable friction shoes;

Fig. 6 is a view similar to Fig. 1 showing the gear under compression;

Fig. 7 is a longitudinal vertical sectional view similar to Fig. 2 showing a modified construction, the section being indicated by line VII—VII of Fig. 8;

Fig. 8 is a horizontal sectional view indicated by the line VIII—VIII of Fig. 7;

Fig. 9 is a cross sectional view indicated by the line IX—IX of Fig. 7;

Fig. 10 is a sectional detail view showing the use of a liner or shim between the casing and the wearing shoe; and

Fig. 11 is a similar sectional detail view showing a modified construction of the mounting of the wearing shoe member.

In the drawings, 2 represents the draw bar of the coupler connected with the front end portions of a U-shaped yoke 3 by transverse bolts or rivets 4 extending therethrough as shown and of usual construction. Yoke 3 embraces the casing or cylinder 5 passing around its rear portion, preferably with an intervening filler block 6, and thus providing a solid pulling connection between the casing and the draw bar, while providing for free rearward movement of the yoke independent of the casing in buffing.

Casing 5 in the construction illustrated, is generally rectangular in cross section, adapting it to practically fill the space between the center sills 7, 7, and the casing is capable of a limited range of longitudinal movement between a rear reinforcing abutment 8 secured solidly between the center sills and a forward follower plate 9, which in turn abuts forwardly against the usual stops 10, 10. The active friction creating element of the gear is a central wedge block 11 normally abutting by its front end against follower 9 and by its rear wedge faces against expanding wedges 12, which in turn bear by their inner end portions against a central expanding wedge 13. Said wedge in turn bears against the inwardly disposed wedge faced portions 14 of friction shoes 15, which are also engaged by the expanding wedges 12 in the same manner generally as shown in my prior Patent Number 1,131,472.

Interposed between the rear end portions of the friction shoes 15 and the inner end of the casing 5 are one or more springs 16

of well known construction and operation, adapted to effect initial resistance upon operation of the gear, and to readjust the wedge mechanism to normal position upon termination of either buffing or pulling strains.

Heretofore, I have mounted the friction shoes within the forward portion of the surrounding casing or frame and in direct bearing engagement therewith. Such construction has certain disadvantages in that upon the casing or shoes being worn it is necessary to substitute an entirely new casing or new shoes, and it is not feasible to easily adjust the parts to take up or compensate for wear.

My present construction has in view to provide wearing shoes which are not only capable of being replaced when worn, but in themselves constitute efficient bearing members, greatly supplementing the strength of the casing itself, amplifying the wearing surface and providing for their easy and accurate adjustment upon being worn. These wearing shoes, indicated by the numeral 17, preferably extend throughout the entire length of the casing, at each opposite side and abut by their inner ends 18 against the inner corner portions of the casing, thereby insuring great stability and positive transmission of the forces between the wearing shoes and the casing in buffing, or vice versa in pulling.

Additional reinforcing connection is preferably provided by laterally extending lugs 19 engaging receiving openings 20 in the sides of the casing, by which the wearing shoes are further secured against movement in either direction, and are also capable of being set inwardly for the insertion of filler strips or shims, as indicated in Figs. 10 and 11.

The front wearing portions of the shoes 17 are provided with one or more longitudinal grooves 21, into which project corresponding ridges 22 of friction shoes 15. By this means the frictional surfaces are increased and without any sacrifice of cross sectional space. The parts are also maintained in their proper longitudinal and assembled relationship.

Rearwardly beyond the wearing portions of the shoes the inner faces of their shank portions are preferably corrugated as indicated at 23, providing reinforcing portions adapted to strengthen the wearing shoes and without interference with the inclosed springs.

The longitudinal faces of the grooves 21 and of ribs 22 are preferably inclined slightly, converging inwardly in the direction of movement of the friction shoes, thereby greatly increasing the frictional capacity of the gear, and providing for immediate frictional contact in either buffing or pulling.

In Fig. 1[a] I show a modified arrangement of the parts in which the wearing shoes 17′ are provided at their inner ends with terminals 18′ of sufficient area to provide bearings for the inner ends of the spring or springs 16′. By this means I insure against displacement of the wearing shoes, independently of any other means, the spring pressure tending to hold them in place within the casing 5′.

In the construction of Figs. 7, 8 and 9, the general arrangement is substantially the same as above described except that the cross sectional shape of the gear casing is modified due to the narrowing of the vertical width of the wearing shoes and friction shoes and a modified arrangement of the interior springs 16[a] which, as shown, are arranged side by side. I also show a combination follower and clamp 9[a] arranged in the same general manner between the central wedge block 11[a] and the rear end portion of the draw bar 2[a], but provided with upper and lower rearwardly extending cheek portions 9[b] having inwardly turned terminals 9[c] which engage terminal shoulders 5[c] of gear casing 5[a]. In operation, this follower member is free to move inwardly in buffing, or to permit of forward movement of the casing in pulling, but in normal position of the parts maintains them all in tight compact position for operation, as held by the slight pressure of the springs 16[a]. The clamp follower thus operates as a useful and convenient holding element, in addition to its ordinary functions in providing a resisting abutment in draft stresses, and a transmitting element between the draw bar and the friction creating elements in buffing.

As stated, the construction of the wearing shoes admits of the insertion of a spacing filler or shim 24 between the casing and the shoe, as indicated in Fig. 10, and such filler may be supplemented from time to time by additional fillers or those of increased thickness as the inner wearing faces of the shoes become worn. The wearing shoes may thus be used practically to exhaustion, being set inwardly from time to time while maintaining efficient abutting engagement with the casing and insuring maintenance of the position of the parts throughout the life of the gear.

In Fig. 11, I show a further modification in which the casing 5[e] is provided at its front end with an inwardly extending lip 5[d] adapted to engage the end of the wearing shoe 17[e], as will be readily understood, thus assisting in its reinforcing maintenance and the transmission of the strains and prevention of displacement.

The several parts of the modified con-

struction of the gear as illustrated in Figs. 7, 8 and 9, other than hereinbefore explained, correspond to the parts of the principal figures with corresponding identifying numerals having the exponent "a," as will be easily understood without further description.

The generally rectangular formation of the casing 5^a is similar to that of casing 5 adapting the casing to be fitted between center sills without waste space, and in either form of construction the casing is easily embraced and held by the yoke 3 or 3^a, and is supported by a lower cross plate 25 or 25^a secured to the center sills in the usual way.

If desired, either form of gear may be mounted edgewise instead of flatwise as shown, between the sills, as where it is connected with the draw bar by the well known side straps or bars or a side yoke, in which case ample clearance for such mounting is provided.

The gear as constructed is capable of developing high resistance to the usual strains of car service; it is comparatively simple, cheap and extremely durable, adding largely to the usual life of gears of this general class. The parts are easily made of suitable available material, iron, steel, or alloyed embodiments of either, and the several parts are capable of being used as cast with a minimum of finish. The gear in its entirety may be assembled and shipped or handled without risk of its parts becoming disarranged or lost, and of being quickly and easily applied or detached from a car framing, without the necessity of cutting or destruction of any of the usual parts of the equipment.

It may be changed or varied in different details of construction, proportioning of the parts, areas of the wearing faces, or in other details by the skilled mechanic, but all such changes are to be understood as within the scope of the following claims.

What I claim is:

1. In combination with a car underframe having a rear abutment and forward stops, a rectangular casing adapted for mounting in the underframe provided with relatively movable friction creating mechanism, a central wedge block, a draw bar having means connecting it with provision for lost motion to the casing, and a follower interposed between the central wedge block and the rear end of the draw bar; oppositely located wearing shoes inserted between the sides of the casing and movable members of the friction mechanism having lug engagement with the casing and rearwardly extending non-wearing portions extending backwardly into abutting engagement with the rear end of the casing.

2. In combination with a car underframe having a rear abutment and forward stops, a rectangular casing adapted for mounting in the underframe provided with relatively movable friction creating mechanism, a central wedge block, a draw bar having means connecting it with provision for lost motion to the casing, and a follower interposed between the central wedge block and the rear end of the draw bar; oppositely located wearing shoes inserted between the sides of the casing and movable members of the friction mechanism having lug engagement with the casing and rearwardly extending non-wearing portions extending backwardly into abutting engagement with the rear end of the casing and provided with inner corrugated faces.

In testimony whereof I hereunto affix my signature.

JOHN F. COURSON.