J. F. COURSON.

DRAFT GEAR.

APPLICATION FILED MAY 14, 1910.

**1,006,634.**

Patented Oct. 24, 1911.

2 SHEETS—SHEET 1.

Fig. 1.

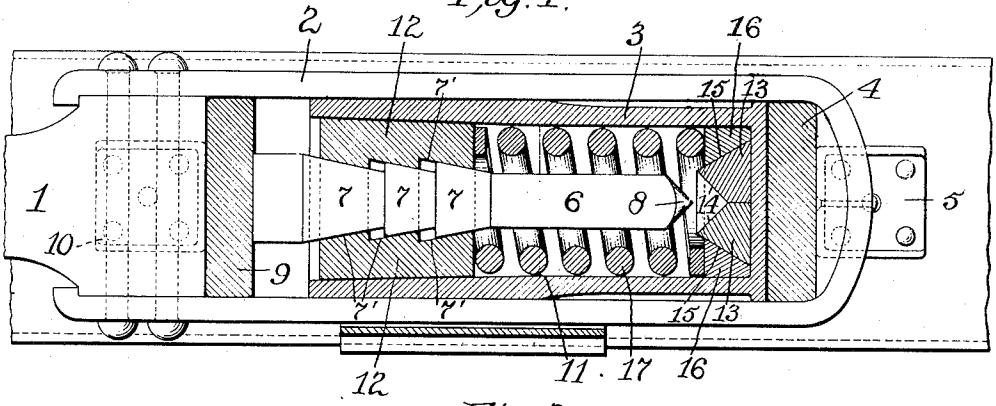



Fig. 2.

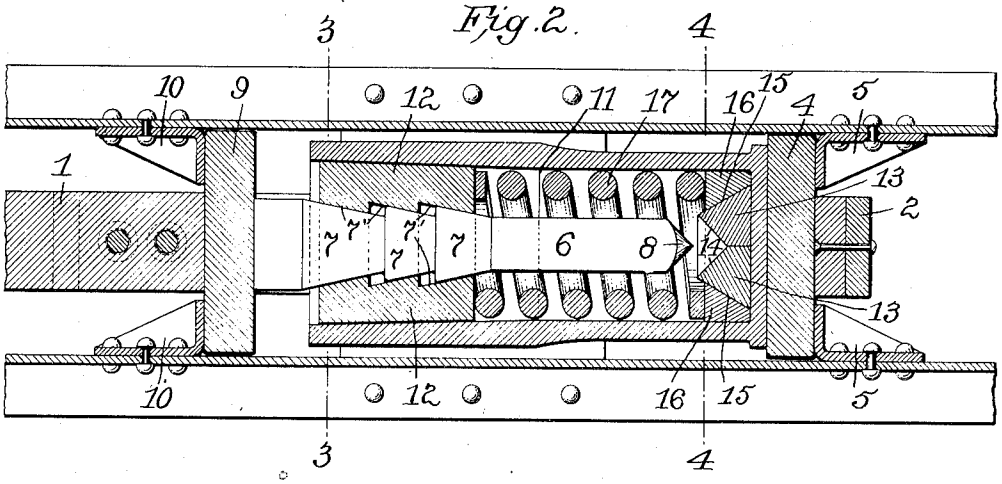



Fig. 3.

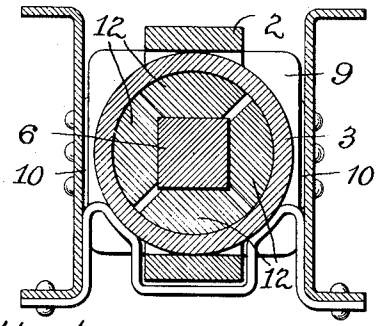
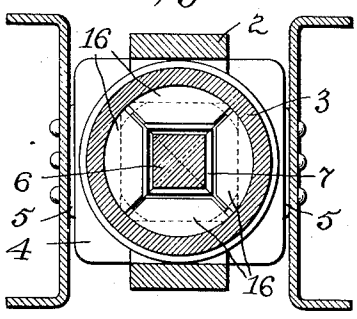



Fig. 4.

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2 SHEETS—SHEET 2.

*Fig. 5.*

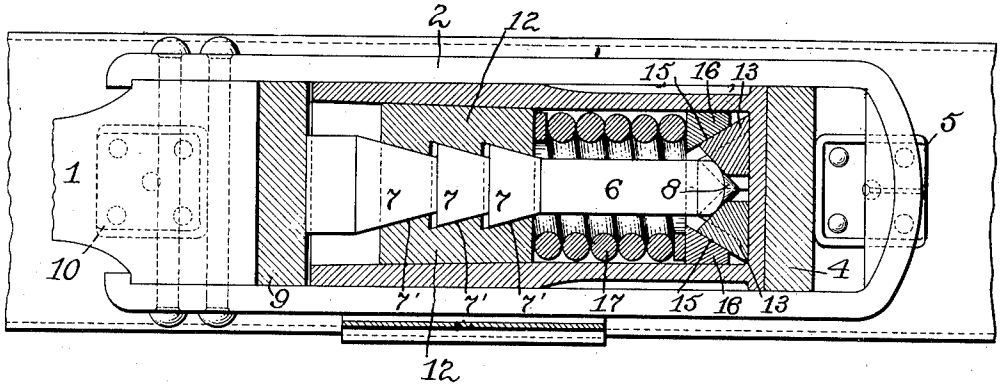



*Fig. 6.*

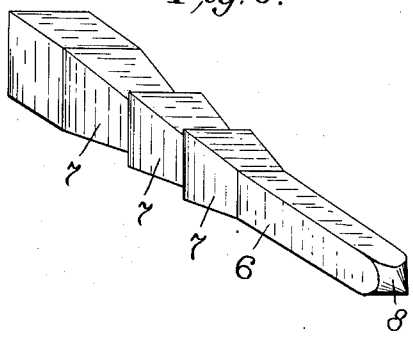



*Fig. 7.*

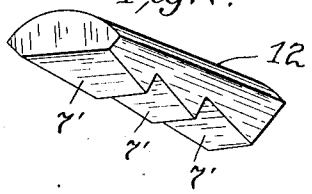



*Fig. 8.*

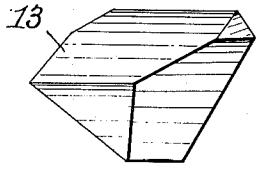
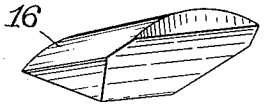



*Fig. 9.*

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# UNITED STATES PATENT OFFICE.

JOHN F. COURSON, OF PITCAIRN, PENNSYLVANIA.

## DRAFT-GEAR.

1,006,634. Specification of Letters Patent. Patented Oct. 24, 1911.

Application filed May 14, 1910. Serial No. 561,500.

*To all whom it may concern:*

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

My invention relates to draft gears, one object being to provide an apparatus which will be simple in construction and efficient in operation, with provision for affording sufficient cushioning or frictional resistance for ordinary strains and additional means which come into play for increasing the cushioning and frictional resistance effect under greater shocks or strains.

The invention consists in the features of construction and combination and arrangement of parts hereinafter described and particularly set forth in the appended claims.

In the accompanying drawings Figure 1 is a longitudinal sectional view of a draft gear embodying my invention with the parts in open position; Fig. 2 is a similar view a quarter turn from the view shown in Fig. 1; Fig. 3 is a cross sectional view on the line 3—3 of Fig. 2; Fig. 4 is a cross sectional view on the line 4—4 of Fig. 2; Fig. 5 is a view similar to Fig. 1 with the parts in closed position; Fig. 6 is a perspective view of the central wedge bar; Fig. 7 is a view of one of the front friction blocks; Fig. 8 is a view of one of the rear wedge blocks; and Fig. 9 is a view of one of the rear friction blocks.

In these drawings, 1 is a part of the draw bar, having a yoke 2 bolted thereto embracing the cylinder 3 in which the spring and friction members of the draw gear are contained. The rear end of the cylinder rests against a follower plate 4, which is within the rear end of the yoke, and is adapted to bear on stops 5 riveted to the sills of the car. Within this cylinder a wedge 6 extends centrally in the form of a bar, preferably of rectangular form in cross section, and having on each face a series of inclines 7 at its front and a plain rear portion terminating preferably in a point 8 of tapered form. This bar engages at its front end a follower plate 9 adapted to bear upon front stops 10 on the car sills. The interior of the cylinder is tapered from the front rearwardly to the point 11, from which point the cylinder bore is cylindrical to its terminus at the rear.

Between the central wedge and the tapered front portion of the cylinder friction shoes 12 are located, these being four in the form shown, but I do not limit myself in this respect. These friction shoes or blocks are tapered to conform to the taper of the cylinder, and they have each a series of inclines 7′ on their inner faces corresponding to the inclines of the wedge bar 6. At the rear end of the cylinder I provide wedge blocks 13, and in the particular form of apparatus shown there are four of these, but I do not limit myself to any particular number. These wedge blocks have inclined front or inner faces at 14 to receive pressure from the tapered end 8 of the central wedge bar, and they have also inclined outer faces 15 adapted to bear on the inner inclined faces of the friction blocks 16, which have outer faces to bear on the interior of the cylinder at its rear end. A spring 17 is interposed between the front friction blocks 12 and the rear friction block 16. Normally the wedge bar stands with its rear end at a slight distance in advance of the rear wedge blocks, and friction shoes 13 and 16, and in the initial action the resistance is derived from the friction blocks at the front of the cylinder, and the spring, this frictional and spring resistance being sufficient for ordinary buffing and pulling strains, but in case of unusual shocks, such as in accidents, the rear friction members come into play in connection with the spring to cerate additional frictional and spring resistance.

The action is as follows: When pressure is applied either in buffing or pulling, the central wedge bar is moved inwardly in respect to the cylinder, and its inclines, bearing upon the inclines of the friction blocks, force the same outwardly against the tapered walls of the cylinder, causing them to bind tighter and tighter thereagainst as the spring is compressed by the inward movement of the said friction shoes. In this inward movement, the friction shoes will move slightly faster than the wedge bar owing to the pressure exerted upon the wedge blocks between the inclined inner faces and the inclined inner surface of the cylinder, the wedge blocks under this pressure being squeezed or forced inwardly or down the inclines in the wedge bar, which are steeper than the incline of the cylinder. This action will be clear from a comparison of Figs. 1 and 5. This movement of the friction blocks

inwardly in advance of the inward movement of the wedge block creates great friction between the tapering faces or teeth on the bar and those on the friction shoes, and also between the friction shoes and the cylinders. After the bar and friction shoes move into the cylinder a certain distance, the tapering end of the bar comes in contact with the rear wedge blocks, and when great enough pressure is applied to the bar, the rear wedge blocks are forced out against the second set of friction shoes 16, which have the spring 17 bearing thereon, forcing them tightly against the interior of the cylinder and at the same time forcing them forward, creating great friction in this action and causing the spring to be compressed by pressure against its inner end at the same time that it receives pressure upon its forward end from the forward friction blocks. This causes double compression of the spring in the sense that it is compressed by the movement of the front friction blocks, and also by the movement of the rear friction blocks, and these two sets of blocks secure a double frictional resistance effect, the whole arrangement enabling the cushioning or absorbing of a much greater blow than is possible where only one set of friction shoes is employed. When pressure on the central wedge bar is relieved, the spring will assert itself and return the parts to their normal position.

Pressure is applied to this form of gear either by pushing the central bar into the cylinder, in which case the rear end of the cylinder bears on the rear follower plate 4, which in time finds a bearing against the rear stops 5, or by pulling the cylinder forward against the bar, in which case the bar is held by the front follower plate bearing against the front stops 10.

I do not limit myself to the details of construction, as an instance of which I may mention that the end of the central wedge member may be other than tapered in shape, and the resistance means at the rear of the cylinder may be altered from the form shown.

I claim as my invention:

1. In combination in a draw gear, a cylinder, a wedge member movable longitudinally thereof, and having inclines, friction blocks having corresponding inclines and interposed between the said member and the cylinder, a spring in rear of the said friction blocks, said friction blocks being movable rearwardly, and friction blocks at the rear of the cylinder engaging the spring with means for moving them outwardly against the cylinder and forwardly against the spring when the central wedge member is moved rearwardly, and operates the said means substantially as described.

2. In combination in a draw gear, a cylinder, a wedge member movable longitudinally thereof, and having inclines, friction blocks having corresponding inclines and interposed between the said member and the cylinder, a spring in rear of the said friction blocks, said friction blocks being movable rearwardly, and friction blocks at the rear of the cylinder engaging the spring with means for moving them outwardly against the cylinder and forwardly against the spring when the central wedge member is moved rearwardly, said means consisting of the wedge blocks at the rear of the cylinder bearing on the rear friction blocks, and arranged to be borne upon by an extension of the central wedge member, substantially as described.

3. In combination a cylinder, front and rear follower plates, front and rear stops, friction members at front and rear of the cylinder bearing thereon with a spring interposed between them, and bearing thereon, and means for forcing said friction members outwardly to bear on the cylinder and toward each other to compress the spring between them, the friction members at the front moving rearwardly and the friction members at the rear moving forwardly within and in respect to the cylinder, substantially as described.

4. In combination a cylinder, friction members at front and rear of the cylinder with a spring interposed between them, and bearing thereon, and means for forcing said friction members outwardly to bear on the cylinder and toward each other to compress the spring between them, said means acting first upon the front friction members and then upon both the front and the rear friction members, substantially as described.

5. In combination in a draw gear, a cylinder, a wedge member movable longitudinally thereof, and having inclines, friction blocks having corresponding inclines and interposed between the said member and the cylinder, a spring in rear of the said friction blocks, said friction blocks being movable rearwardly, and friction blocks at the rear of the cylinder engaging the spring with means for moving them outwardly against the cylinder and forwardly against the spring when the central wedge member is moved rearwardly, said means consisting of the wedge blocks at the rear of the cylinder bearing on the rear friction blocks, and arranged to be borne upon by an extension of the central wedge member, said wedge consisting of the buffing bar movable longitudinally of the cylinder, substantially as described.

6. In combination in a draw gear, a cylinder, a wedge member movable longitudinally thereof, and having inclines, friction blocks having corresponding inclines and interposed between the said member and the

cylinder, a spring in rear of the said friction blocks, said friction blocks being movable rearwardly, and friction blocks at the rear of the cylinder engaging the spring with means for moving them outwardly against the cylinder and forwardly against the spring when the central wedge member is moved rearwardly, said means consisting of the wedge blocks at the rear of the cylinder bearing on the rear friction blocks, and arranged to be borne upon by an extension of the central wedge member, said wedge bar acting first upon the front friction members and subsequently upon both the front and rear friction members simultaneously, substantially as described.

7. In combination the cylinder, friction members at the front thereof having inclines, a spring in rear of said friction members, a wedge bar extending centrally of the cylinder and having inclines engaging the inclines on the friction members, and resistance means at the rear of the cylinder acted on by the wedge bar after the front friction members have been operated, substantially as described.

8. In combination a cylinder, friction blocks disposed at different points along and within the same, means for pressing the friction blocks at one point against the cylinder, and subsequently contacting with and pressing those at another point against the cylinder while continuing to press those first operated, and a follower for operating the said means substantially as described.

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

JOHN F. COURSON.

Witnesses:
FRANCIS S. MAGUIRE,
EDWARD N. SARTON.