J. J. EWING.

DRAFT GEAR.

APPLICATION FILED MAR. 23, 1916.

1,199,167

Patented Sept. 26, 1916.

2 SHEETS—SHEET 1.

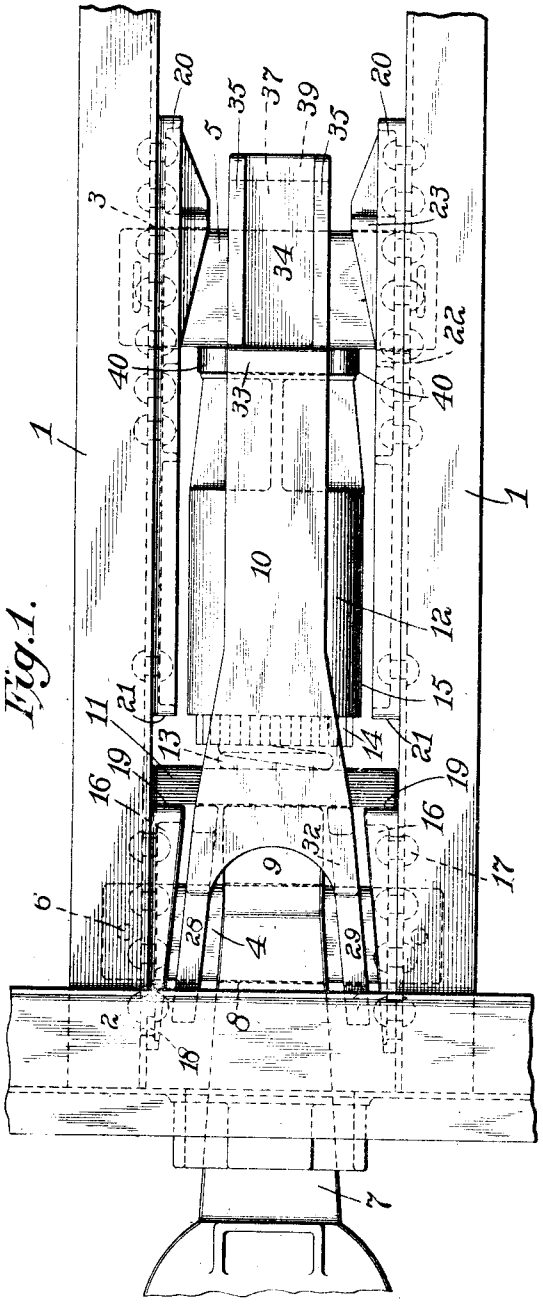


Fig. 1.

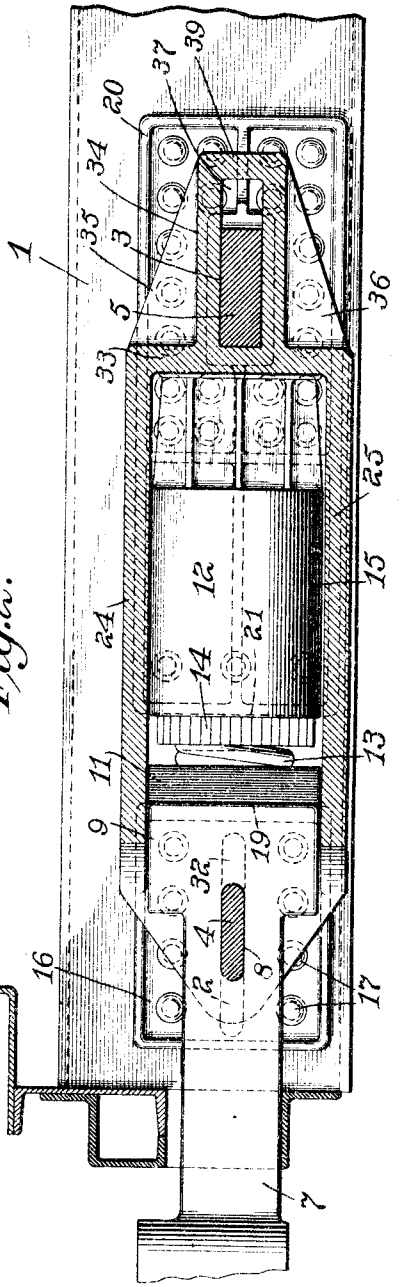


Fig. 2.

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2 SHEETS—SHEET 2.

Fig. 3.

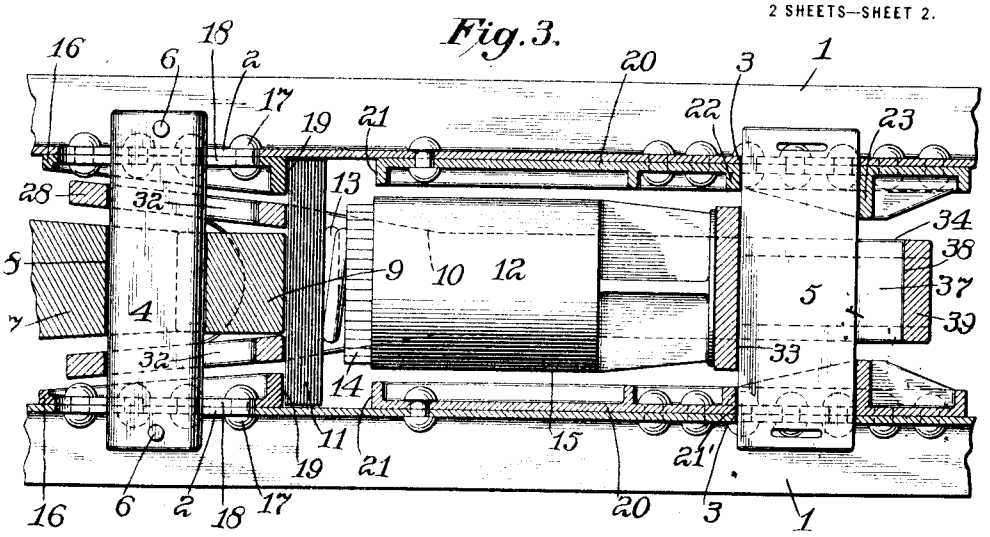


Fig. 4.

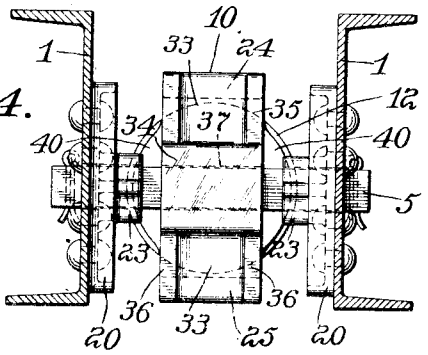
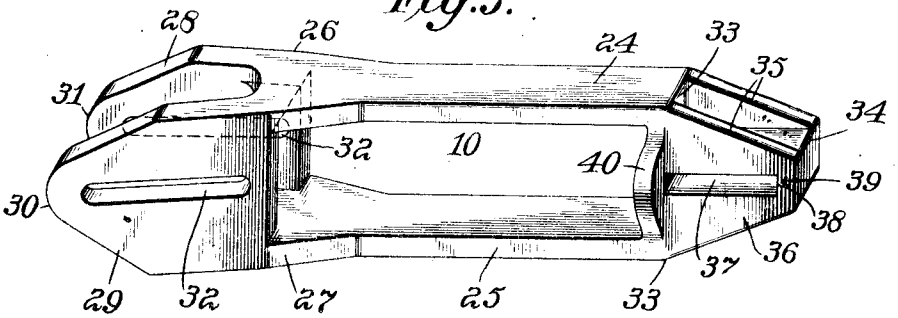


Fig. 5.



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UNITED STATES PATENT OFFICE.

JOHN J. EWING, OF RICHMOND, VIRGINIA.

DRAFT-GEAR.

1,199,167. Specification of Letters Patent. Patented Sept. 26, 1916.

Application filed March 23, 1916. Serial No. 86,102.

To all whom it may concern:

Be it known that I, JOHN J. EWING, a citizen of the United States, residing at Richmond, in the county of Henrico and State of Virginia, have invented certain new and useful Improvements in Draft-Gears, of which the following is a specification.

My invention relates to a new and useful improvement in draft gears and more particularly to the form of the yoke which is used in a draft gear to transmit the forces of pulling and buffing from the coupler of the car to the car body through resistant elements.

An object of my invention is to provide a simple, and at the same time a strong arrangement for taking up the pulling and buffing forces and accomplish this in a minimum longitudinal space.

Another object of my invention is to provide a yoke that does away with the ordinary rear follower or supporting bar or cross piece under the sills, and which is just as effective in service and naturally much more simplified in construction.

Still another object of my invention is to support the yoke by two transverse keys, one of which is movable in the sills of the car body and the other tightly secured against any movement.

Still another object of my invention is to provide a draft gear supported and held by transverse keys passing through the front and rear ends of the yoke, and to also position stops in certain spaced relation with said transverse keys, so that after the limit of compression has been reached by the resistant means in said yoke, the stops will take up any additional buffing shocks and coöperate with the rear transverse key.

Still another object of my invention is to provide a yoke that may be readily and cheaply cast and formed with a minimum amount of metal, but so designed as to be exceedingly strong at the necessary places or positions.

Still another object of my invention is to provide a yoke in which may be used any preferred form of resisting frictional elements or springs and at the same time necessitating but one follower.

Still another object of my invention is to provide a draft rigging which comprises simply the yoke, transverse keys and stops which may all be readily attached to any car and necessitating only one follower and any preferred form of resistant element.

The beams of the center sill of the car body will naturally have to be provided with openings, which in one instance provides for a longitudinal movement of a transverse key and another opening opposite the rear of the yoke which will snugly receive the end portions of a second key, so that the latter key is fixed against movement with relation to the body of the car. The openings in the yoke however, are such that the yoke may move with relation to the keys and to the center sills of the car and the resistant elements and follower maintain the yoke at a predetermined normal position with relation to said sills; and a movement of the yoke with relation to the sill and keys does not occur until the yoke is subjected to sudden or abnormal shocks or pressure, and this only in a pulling movement.

With the above and other objects in view my invention consists in certain new and novel features and combination of parts and construction of elements as will be hereinafter more fully described and pointed out in the claims.

Referring now to the drawings forming a part hereof and in which like numerals designate like parts, Figure 1 is a top plan view showing the draft rigging inserted between the center sills of the car and the parts in their normal position. Fig. 2 is a similar vertical central section with the resistant element in elevation. Fig. 3 is a similar horizontal sectional view partly in plan. Fig. 4 is an end elevation and Fig. 5 is a perspective view of the yoke.

Referring now to the drawings, it will be seen that the sills to which the draft gear is applied consist of two parallel beams 1 of the standard form, the said beams being provided with elongated openings 2 and 3, the openings 3 however being not as great in length as the aforementioned openings 2. These sets of openings are in longitudinal alinement and receive the transverse keys 4 and 5. The bolts or cotter pins or any other form of retaining means

6 are passed through the ends of the transverse key 4 to prevent the same from moving laterally. The rear key 5 may be fastened in any preferable manner to the sills 1. The key 4, as will be noticed is not as great in width as the elongated openings 2, so that the same may slide or move with relation to said beams when performing its function hereafter to be set out. The rear key 5 is adapted to fit tightly within the openings 3 in the aforementioned sills 1, and be held against any forward and rearward movement.

Any suitable form of coupler shank is shown as at 7 which shank is also provided with a transverse opening 8 through which is passed the key 4 when the draft gear and coupler are assembled. The rear end 9 of the said shank 7 is adapted to pass through the forward end of the yoke 10, hereinafter to be referred to, and to bear against a follower 11.

Located within the pocket of the yoke is a resistant or friction element 12 which is shown in plan view throughout, as it is not the subject matter of the present invention. Any preferable form of resistant or friction element may be used or any form of springs which are capable of taking up or resisting the bufling or pulling shocks that the gear will be naturally subjected to. In the drawings there is shown a spring 13 that contacts with the follower 11, and with the resistant element 14 that fits within the casing 15.

Taking up now the explanation of the side plates 16 it will be seen that at the forward end of the draft gear are placed two of them, which plates are suitably fastened as at 17 to the sills 1. These are provided with openings 18 which are set in alinement with the openings 2 in the sills, the said openings being of the same length as the openings in said sills. It is to be noticed that the rear ends of these plates however are larger than the forward ends, and extend inwardly to form the stops 19 and are in alinement with the rear end of the draw bar 7 when the same is in its normal position. The follower 11 extends transversely of the yoke 10 and rests against these stops 19 and against the rear end of the draw bar 7 when the same is in its normal position. The forward limit therefore of the movement of the said follower is determined by the stops 19 on the plates 16.

Located slightly to the rear of the follower are the further plates 20 and the same are positioned on the inner side of the sills 1 similarly to the aforementioned plates 16. However in this instance the plates 20 are of greater length than the aforementioned plates and extend from slightly behind the follower to beyond the rearmost end of the yoke 10. The forward ends 21 of these plates 20 limit the rearward motion of said follower 11. The position of these forward ends will be determined by the form of resistant element used, or in other words these stops are located so that after the resistant element has been compressed to its limit the follower will contact with the said forward ends 21 to relieve any further strain on the key 5 located at the rear of the yoke 10. These plates 20 are also provided with openings 21′ near the rear end thereof which openings are the same in length as the slots 3 in the center sills and are directly in alinement therewith. These plates are also fastened similar to the former plates in any preferable manner and are reinforced at both ends of the openings 21′ by the forward ribs 22, and ribs at the rear 23. These ribs extend inwardly as shown and may be of any preferable shape, the idea being to reinforce the plates as greatly as possible at these points.

Taking up now the explanation of the yoke which constitutes an essential feature of the present invention, it will be seen that the same is preferably a unitary structure and composed of cast metal. The body of the yoke includes the top portion 24 and bottom portion 25 which portions broaden out at their forward ends as at 26 and 27. The forward end of the body portion is bifurcated to form the two arms 28 and 29 and which arms are slightly spread, so that the outer ends of the same are farther apart than their inner ends. These arms 28 and 29 are also slightly pointed at their forward ends as at 30 and 31. Formed in these arms 28 and 29 and located centrally thereof are the longitudinally extending openings 32, these openings extending from a point near the forward end of the arms to a point near the rear end thereof. The upper and lower portions 24 and 25 define the top and bottom of the space for the reception of the resistant element and the rear ends of the arms 28 and 29 limit or define the forward wall of said space, while the wall 33 at the rear ends of the top and bottom portions 24 and 25 limits the rearmost wall of said pocket. This wall is reinforced at its sides by the lugs 40.

It is to be noticed that there is no transverse vertical wall extending between the two arms 28 and 29, as a space is purposely left for the reception of the rear end of the draw bar 7, which contacts with the follower 11, which follower contacts with the rear edge of said walls 28 and 29 when the same is in position.

Referring now to the construction of the rear of the yoke 10 which is of great importance there is shown a projection 34, that is provided with the upper ribs 35 and the lower ribs 36 which ribs extend from the outer end of the projection 34 to the top

portion 24 in one instance and to the lower portion 25 in the other instance. Passing through this reinforced projection 34 is a further elongated slot 37 which extends from a point behind the rearward wall 33 to a point 38, leaving a wall 39 to the rear of said opening.

The elongated opening 37 in the extension 34 of the yoke 10 is greater in length than the openings 3 in the center sills and in the plates 20, and also greater than the transverse breadth of the key 5, so that the said yoke may move with relation to said key and said sills. The said key 5 when in its normal position contacts at its forward edge with the wall 33 and the reinforcing lugs 40 thereon, the said key 5 guiding the rear end of the yoke in its movement, limiting its longitudinal movement and transmitting the strains to the plates and center sills.

Taking up now the action, and first when a pulling strain is exerted; when the draw bar 7 is pulled forwardly it carries with it the key 4, the said key sliding in the openings 2 in the center sills and in the openings within the stops 16. This key 4 then pulls forwardly the yoke 10 thereby compressing the resistant elements 13 and 14 which are held against forward movement by the follower 11, the follower being held against forward movement by the rear stops 19 on the plates 16. At the same time of course the rear extension 34 slides over the key 5, the length of the rear slot 37 being such that the rear end of the same contacts with the rear edge of the key 5 at the limit of the travel of the resistant elements 13 and 14. This is an exceedingly valuable function in that it brings in the resisting action of the key 5 to help the resistance afforded by the stops 19 on the plates 16 if the pull should happen to be in excess of the capacity of the resistant elements.

Taking up now the reverse action that is the buffing action; the yoke having returned to its normal position as shown in Figs. 1, 2, and 3, and the rear wall 33 resting against the front edge of the key 5; the coupler shank or draw bar 7 will bear directly against the follower 11, and as it moves inwardly it will carry the key 4, which is permitted to slide in the forward openings in the center sills and plates; the yoke does not move rearwardly longitudinally in this instance, that is in the buffing action, but the coupler shank 7 slides through the forward arms 28 and 29 forcing the follower 11 backward compressing the resisting elements 13 and 14 and forcing the follower against the stops 20 and 21, while the rear end of the yoke bears solidly against the key 5 transmitting the shock thereto and to the plates 20 and center sills 1. In other words after the compression element has reached its limit the stops 21 as well as the key 5 will take up the extra forces and the stops 21 of course relieve the pressure on the keys.

From the foregoing it will be seen that the forward key 4 is movable forwardly and rearwardly while the rear key 5 is stationary, so that the rear or extension of the yoke acting with key 5 will help relieve the pressure on the forward stops after the compression element has reached its limit in a pulling action, and that in a buffing action stops 21 take up any strain beyond the compression strain of the resistant element, or in other words coöperating with key 5.

It will thus be seen that by providing the rear of the yoke with the extension mentioned the forward motion of the yoke is limited to relieve the pressure on the forward stops.

With my construction shown although a minimum amount of metal is used in the yoke the same is reinforced at its rear end to withstand the terrific strains that the same is naturally subjected to; also that the stops are designed to take up the severe strain, and that a minimum amount of longitudinal space only is used. Also that although a number of parts generally used are dispensed with the gear is exceedingly simple in operation and accurate in its operation.

I am aware that the structure shown in the forward part of the gear is not new but I am not aware of any draft gears having the arrangement as shown at the rear thereof in the form of an extension to guide the draft gear in its movement, help relieve the shocks on the forward stops, and also support the rear of the yoke so that the strains are distributed to the center sills and plates as shown.

It is to be understood that resistant or frictional elements or springs now used with yokes of the general type of the above may be readily used or one form substituted for that of another.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:—

1. A yoke having spaced side walls and a connecting rear end wall, said yoke being provided at its rear end with an extension having an opening passing transversely through the same, the forward edge of the said opening being flush with the rear surface of the end wall, the yoke also being provided with side lugs the rear surfaces of which lie in the same plane as that in which the rear surface of the end wall lies.

2. A yoke having spaced side walls and a connecting rear end wall, said yoke being provided at its rear end with an extension having an opening passing transversely through the same, the forward edge of the

said opening being flush with the rear surface of the end wall, there being brace portions at the sides of the extension which connect with the rear end of the body of the yoke.

3. A yoke for a draft gear comprising upper and lower walls, arms at the front of said walls, their rear surfaces defining the forward limits of a pocket, a rear wall limiting the other end of said pocket, said rear wall having lugs at its side edges, an extension formed at the rear of said wall and angularly disposed ribs extending to the end of said extension, said arms and said extension being provided with horizontal alined openings.

In testimony whereof I affix my signature.

JOHN J. EWING