April 12, 1932. H. F. WOERNLEY 1,853,293

DRAFT GEAR

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Fig. 1

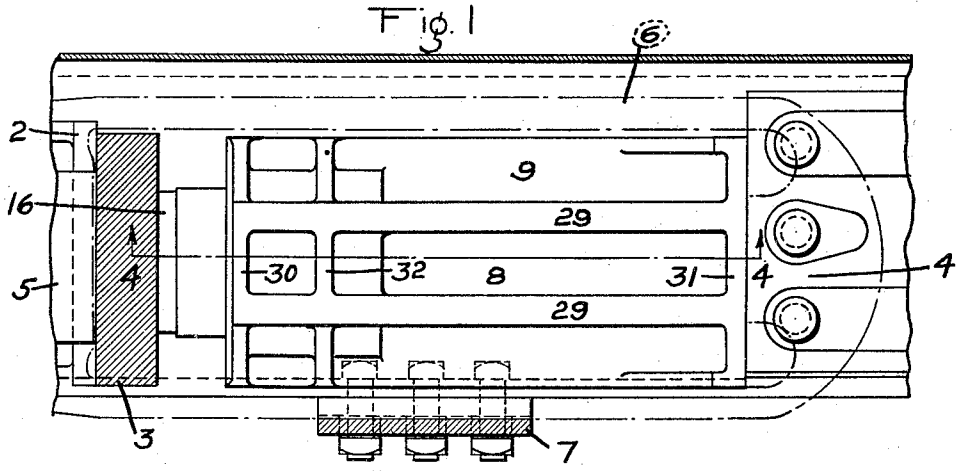


Fig. 2

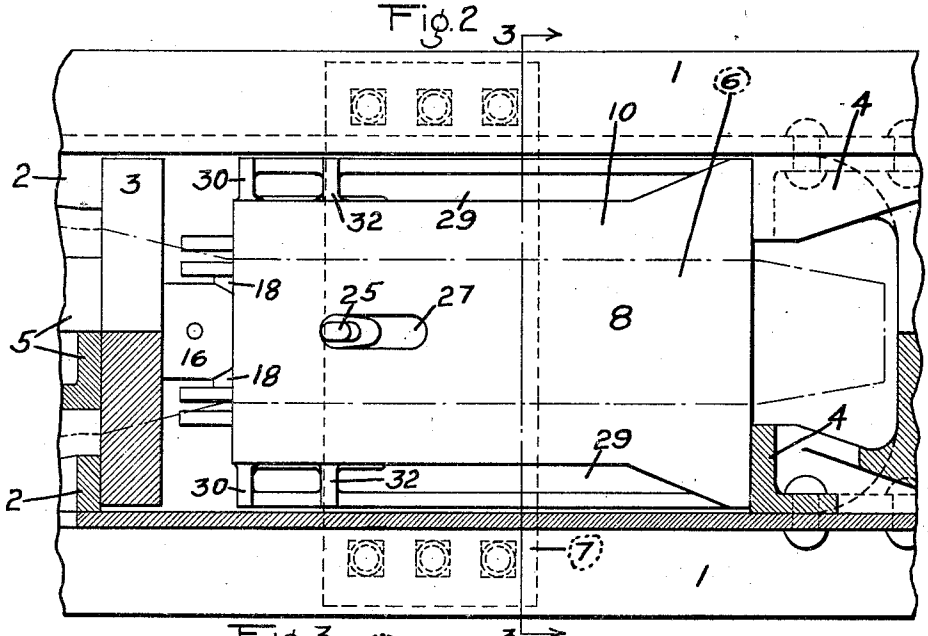
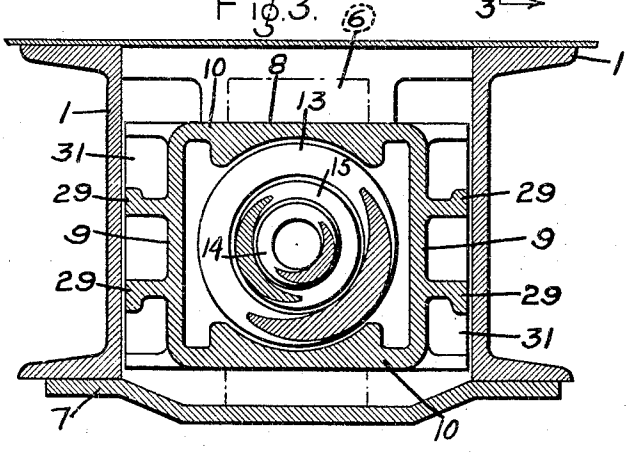


Fig. 3.



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Fig. 4

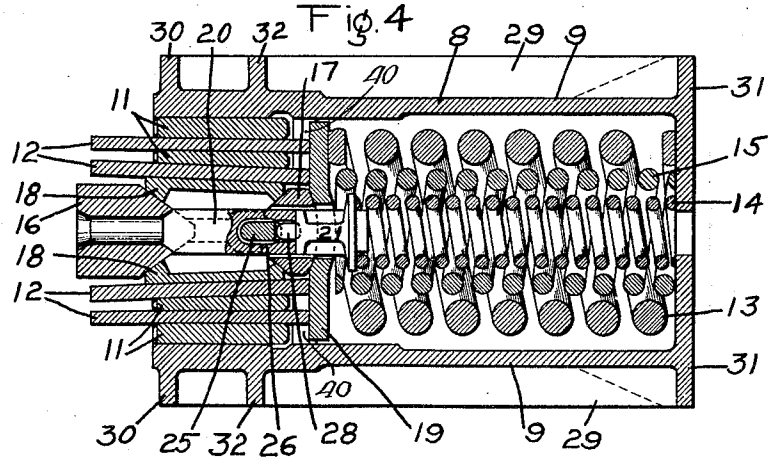


Fig. 5.

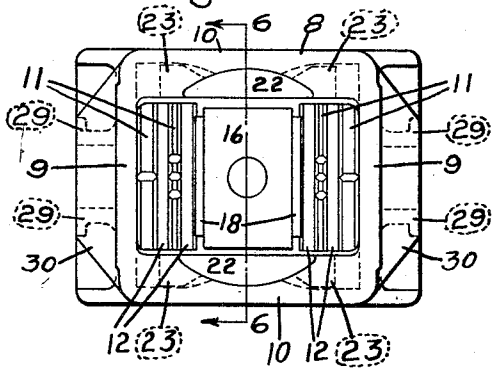


Fig. 6.

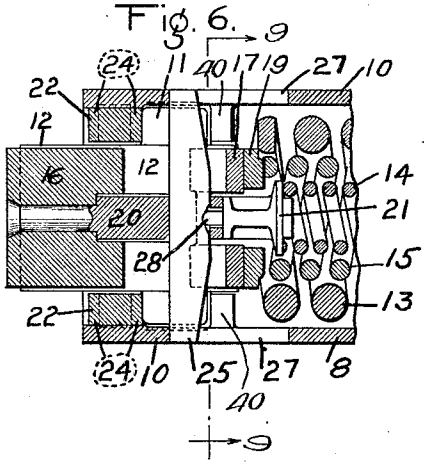


Fig. 7.

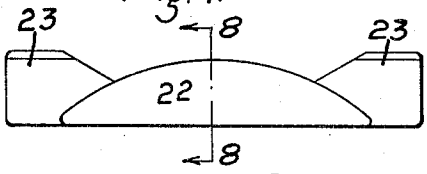
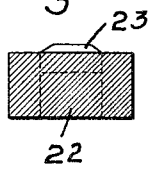


Fig. 8.



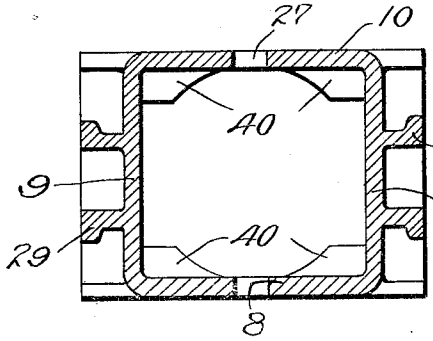


Fig. 9.

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UNITED STATES PATENT OFFICE

HARRY F. WOERNLEY, OF WILKINSBURG, PENNSYLVANIA, ASSIGNOR, BY MESNE ASSIGNMENTS, TO CARDWELL WESTINGHOUSE COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF DELAWARE

DRAFT GEAR

Application filed November 28, 1927. Serial No. 236,051.

This invention relates to draft gears for railway cars and more particularly to friction draft gears.

An object of my invention is to provide a friction draft gear in which the several parts thereof are so formed that they may be easily assembled in building the gear and may be readily removed or replaced should it be desired to repair the draft gear.

Another object of my invention is to provide a friction draft gear with a novel spring assemblage, in which a plurality of springs are arranged one within the other, and each spring wound in such a manner that the coils thereof cannot become caught between the coils of an adjacent spring or springs.

Another object of my invention is to provide the draft gear housing with means adapted to engage the center or draft sills of a car to limit lateral movement of the gear.

A further object of my invention is to provide a draft gear unit having a hollow rectangular housing in which the inner surfaces of the top and bottom walls are made arcuate to accommodate a spring of maximum diameter and to permit the insertion of said spring from the front end of the casing, and another object is to provide fillers adapted to fill the recesses defined by these surfaces to restrict the opening at the front end of the casing to properly receive the friction elements of the unit.

Other objects and advantages will appear from the following more detailed description.

In the accompanying drawings, Fig. 1 is a side elevational view of the draft gear unit constructed in accordance with my invention, and illustrating the unit applied to the center or draft sills, one of said sills being removed and the sill cover plate, follower and draft gear carrier being shown in section; Fig. 2 is a plan view of the same with the cover plate for the sills removed, portion of the view being shown in horizontal section; Fig. 3 is a cross sectional view taken on the line 3—3 of Fig. 2; Fig. 4 is a longitudinal sectional view through the draft gear unit on the line 4—4 of Fig. 1; Fig. 5 is an end elevational view of the draft gear unit; Fig. 6 is a sectional view taken on the line 6—6 of Fig. 5; Fig. 7 is an enlarged front elevational view of one of the fillers for the casing; Fig. 8 is a sectional view of the same taken on the line 8—8 of Fig. 7; and Fig. 9 is a sectional view on the line 9—9 of Fig. 6.

Referring now in detail to the drawings, the reference character 1 indicates the spaced center or draft sills of a railway car between which a friction draft gear unit is mounted. To the webs of the sills 1 are secured front follower stops 2 which form abutments for the follower plate 3, which follower is adapted to cooperate with the forward end of the draft gear unit, the rear end of said unit being adapted to cooperate with stops or abutments 4 also secured to the sills 1. The front face of the follower is adapted to be engaged by the butt of the coupler shank 5 which is attached to the forward end portion of a yoke 6 in the usual manner, the yoke being disposed vertically between the sills and passing around the draft gear unit. For supporting the draft gear unit, the usual draft gear carrier 7 is provided, which extends across the space between the sills and is secured to the lower flanges thereof.

The draft gear unit may comprise a hollow rectangular casing 8 having side walls 9 and top and bottom walls 10 and containing, at its forward end, groups of alternated friction plates 11 and 12 which are disposed at opposite sides of a wedging mechanism, the plates 11 being anchored to the casing 8, and the plates 12 being movable relative to the plates 11 under buffing or pulling impacts. Also contained within the casing, is a spring assemblage which may comprise three coil springs of different diameters and arranged one within the other. The outer or largest spring 13, and the inner or smallest spring 14, are coiled in the same direction, while the intermediate spring 15 is coiled in the opposite direction, so that, when the springs are assembled, the coils of the adjacent springs will extend in directions across one another and thus prevent the coils of one spring from becoming caught between the coils of another spring, and ensuring the proper action of the spring assemblage at all times.

The wedging mechanism comprises longi-

tudinally disposed wedge blocks 16 and 17 having opposed wedging faces adapted to engage corresponding wedging faces of wedge blocks 18 disposed at opposite sides of the wedge blocks 16 and 17. A follower plate 19 is disposed within the casing 8 and engages the inner ends of the friction plates 12, said follower being engaged at the opposite side by the springs 13 and 15. The wedge block 16 is normally engaged by the follower plate 3.

The wedge block 16 is acted upon by the spring 14 through the medium of a stem 20 extending through an opening in the wedge block 17 and a spring follower 21 which engages the inner end of the stem 20 within the wedge block 17.

Portions of the interior surfaces of the top and bottom walls 10 of the casing 8 are each made in the form of an arc of a circle, the diameter of which is slightly greater than the diameter of the large spring 15 so that this spring can be inserted through the front end of the casing. If these recesses were not provided, then any spring having a greater diameter than the greatest vertical dimension through the wedging mechanism could not be inserted through the front end of the casing and would have to be otherwise inserted, which would necessitate a number of objectionable structural changes in the casing and would unnecessarily multiply the number of parts. After the spring 15 has been inserted in the casing, each of these recesses is filled, at the front end of the casing, by a filler 22, having at each end, a vertically disposed transverse lug 23 which is adapted to extend between transverse lugs 24 formed on the walls 10 interiorly of the casing, and the fillers are adapted to be held in interlocked engagement with the housing by the engagement of the several parts of the wedging mechanism therewith. It will thus be seen that the fillers 22 will, by filling the recesses at the front end of the casing, prevent excessive vertical movement of certain of the frictional elements of the wedging mechanism.

The rear ends of the friction plates 11 are wider than the front end portions so that shoulders are formed on the plates which are adapted to engage the rear lugs 24 formed interiorly of the casing, and thus anchor the plates to the housing against undue forward movement, rearward movement being limited by the rear ends of the plates abutting transversely extending lugs 40 projecting inwardly from the top and bottom walls of the casing, their inner ends being of reduced height to permit the entrance of the springs.

When the several parts of the draft gear unit are assembled, they are forced inwardly a short distance, thus initially compressing the spring assemblage, and to maintain this initial compression and to hold the parts in assembled relation, a key 25 is provided which extends vertically through an opening 26 formed in the stem 20 of the wedge block 16 and through elongated slots 27 formed in the top and bottom walls 10 of the casing 8. Intermediate its ends this key is provided with a recess into which a projection 28, on the spring follower 21, is adapted to extend and engage the key to prevent accidental movement thereof in the direction of its length. As the spring 14 is under initial compression, as hereinbefore mentioned, the pressure of this spring acting on the follower 21, will maintain the projection 28 in engagement with the key 25.

Each side wall 9, of the casing 8, is provided with spaced horizontally disposed ribs 29, which extend longitudinally of the casing, and at their ends are connected with vertically disposed front and rear ribs 30 and 31, respectively. Spaced a short distance from the front rib 30 is a like rib 32 which together with the ribs 30 and 31 strengthen the outer end portion of the casing transversely against the expanding force of the wedging mechanism. All of these ribs extend outwardly from the casing a sufficient distance that they substantially fill the space between the webs of the sills 1, there being just sufficient clearance between the ribs and the sills to permit the proper movement of the casing, so that excessive lateral movement of the draft gear unit is prevented.

In the compression of the gear, the follower 3 advances the wedge block 16 which block then exerts a wedging action on the wedge block 18. The wedge blocks 18 are advanced until the follower 3 engages the friction plates 12, which are then advanced, sliding between the anchored friction plates 11. The advance of the wedge blocks 18 is opposed by the springs 13 and 15 acting through the spring follower 19 and the wedge block 17 so that the wedge block 17 also exerts a wedging action on the wedge blocks 18. Outward pressure thus exerted on the wedge blocks 18 increases the frictional resistance to the movement of the friction plates 12.

When the pressure on the gear is relieved, the spring 14 tends to release the wedge block 16, so that the wedging pressure on the wedge blocks 18 is relieved, permitting the springs 13 and 15 to return the friction plates 12 to release position.

While one illustrative embodiment of the invention has been described in detail, it is not my intention to limit its scope to that embodiment or otherwise than by the terms of the appended claims.

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

1. In a draft gear, the combination with a casing, of alternated relatively fixed and movable friction plates mounted in said casing, a spring mounted in said casing tending

to urge said movable plates forward, abutments on the top and bottom walls of said casing adapted to limit the forward movement of said fixed plates, said abutments being recessed to permit of the insertion of said spring from the forward end of said casing, members engaging said abutments adapted to fill the recesses formed in the abutments, and wedge means for exerting lateral pressure on said plates.

2. In a draft gear, the combination with a casing, of alternated relatively fixed and movable friction plates mounted in said casing, a spring mounted in said casing tending to urge said movable plates forward, abutments on the top and bottom walls of said casing adapted to limit the forward movement of said fixed plates, said abutments being recessed to permit of the insertion of said spring from the forward end of said casing, and members interlocked with said abutments adapted to fill the recesses formed in the abutments, and wedge means for exerting lateral pressure on said plates.

3. In a draft gear, the combination with a casing, of alternated relatively fixed and movable friction plates mounted in said casing, a spring mounted in said casing tending to urge said movable plates forward, abutments on the top and bottom walls of said casing adapted to limit the forward movement of said fixed plates, said abutments comprising spaced lugs having recesses formed therein to permit of the insertion of said spring from the forward end of said casing, members adapted to fill said recesses having lugs cooperating with said spaced lugs for maintaining said members against longitudinal movement relative to said casing, and wedge means for exerting lateral pressure on said plates.

In testimony whereof I have hereunto set my hand.

HARRY F. WOERNLEY.