April 5, 1932. W. C. SLEEMAN 1,852,486

DOUBLE ACTING DRAFT GEAR

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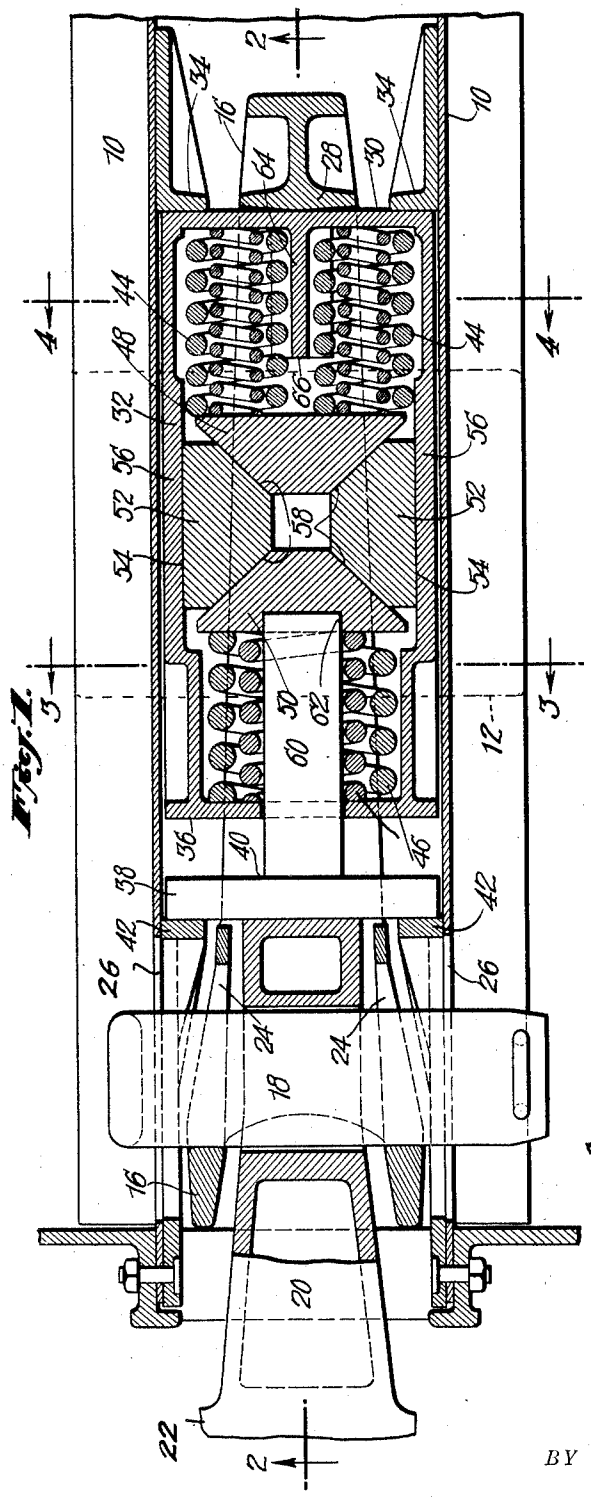

Fig. 1.

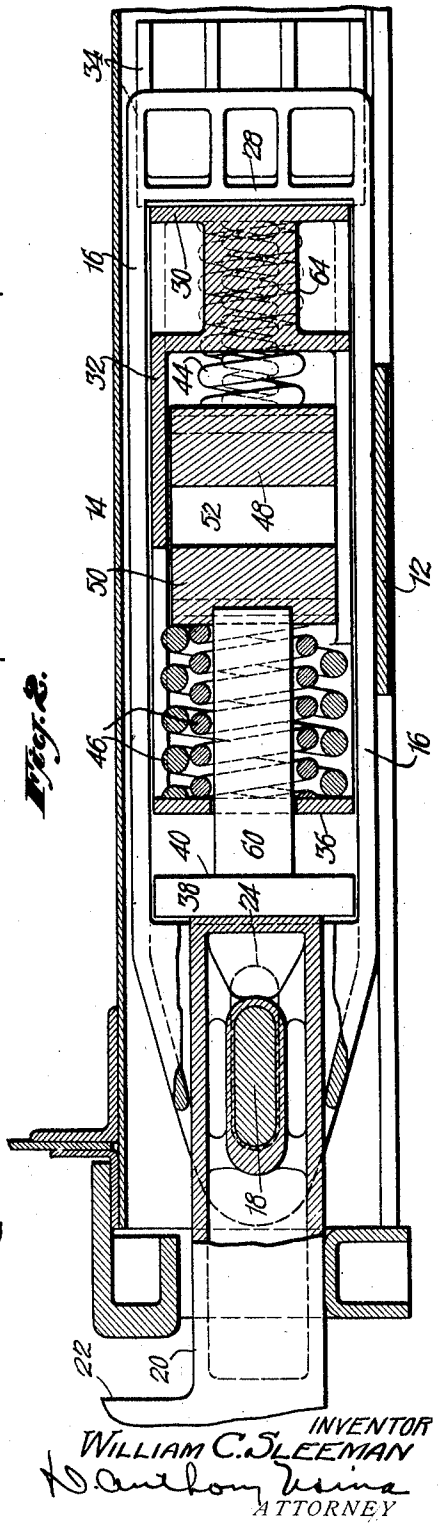

Fig. 2.

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Fig. 3.

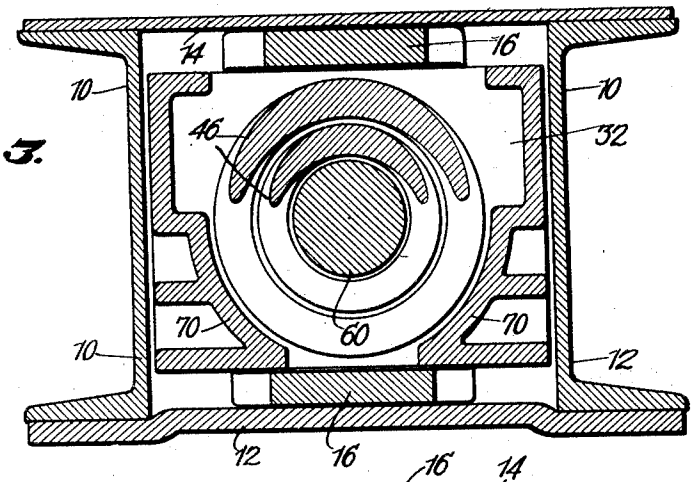
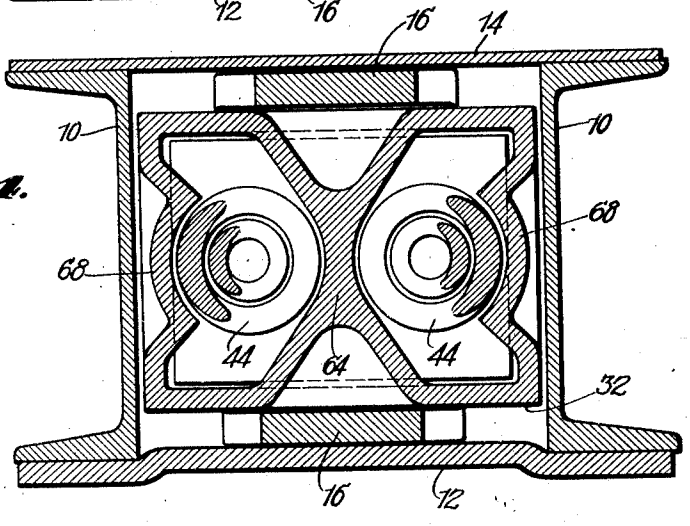


Fig. 4.



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UNITED STATES PATENT OFFICE

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DOUBLE ACTING DRAFT GEAR

Application filed July 18, 1928. Serial No. 293,582.

The invention relates to an improved draft gear having oppositely acting springs so arranged that one spring or set of springs resists both the buffing and pulling forces and the other set absorbs the rebound shock occasioned by the quick release of the first set of springs. The provision of the set of springs for absorbing rebound shocks relieves the car body and associated draft gear parts of tremendous destructive shocks and adds greatly to the life of car sills and the draft gear elements. The draft gears heretofore used so far as I am aware are designed only to resist buffing and draft forces and when the force causing either the buff or pull is quickly removed as frequently happens in the moving of railway cars, the compressed draft gear springs plunge rapidly to their release or expanded positions and cause the car sills and related parts to resist these shocks. My improved draft gear herein described and shown overcomes the shocks occasioned by the quick release of the draft springs and thus enables the draft gear to have a longer useful life and also provides for a smoother and quieter operation.

The invention will be fully apparent from the following specification when read in connection with the accompanying drawings in which—

Fig. 1 is a horizontal section illustrating a draft gear embodying the invention;

Fig. 2 is a vertical section on line 2—2 of Fig. 1;

Figs. 3 and 4 are transverse sections on the correspondingly numbered lines of Fig. 1.

Referring in detail to the drawings, 10—10 represents the usual draft sills which extend longitudinally of a railway car, the sills shown being formed of rolled steel channel sections. My improved draft gear is secured between the webs of these sills and is enclosed between the bottom plate 12 and cover plate 14. A draft yoke 16 is connected by means of a cross-key 18 with the shank 20 of a standard coupler 22. The key 18 passes freely through an elongated slot 24 formed in the yoke, this key extending through slots 26 formed in the draft sills so as to allow freedom for longitudinal movement. The yoke is provided with a heel portion 28 which coacts with the rear wall 30 of a box-like cage 32. When the car to which the draft gear is applied is buffed, the movement of the cage 32 is limited by rear stops 34 secured to the inner faces of the sills 10. The forward wall 36 of the cage 32 is adapted to engage the head 38 of a front follower member 40 which in turn coacts with front stops 42 secured to the inner faces of the draft sills 10 and adapted to limit the forward movement of the draft gear.

Located within the cage 32 I provide oppositely acting sets of springs indicated at 44 and 46, respectively. The sets of springs 44 are adapted to be compressed either by a pulling or buffing force acting on the gear and the set of springs 46 is adapted to absorb shocks occasioned by the rapid expansion of the springs 44 which takes place when the pulling or buffing force acting on the draft gearing is suddenly released. Both sets of springs 44 and 46 are installed under compression. The springs 44 bear against a wedge shaped block 48 and the springs 46 press against a similarly shaped wedge block 50. The wedge blocks 48 and 50 coact with friction blocks 52—52 whose outer faces 54—54 slidingly and frictionally engage the inner faces of the walls 56 of the cage 32. The blocks 48, 50 and 52 as shown are provided with mating wedge surfaces indicated at 58.

The follower block 38 is formed with a shank 60, the extremity of which is fitted in a socket 62 formed in the wedge block 50. The cage is formed with an inwardly extending projecting portion 64, the end 66 of which is adapted to strike the wedge block 48 when the springs 44 are fully compressed. This extending portion 64 is shaped as shown in section in Fig. 4 and the side walls of the cage are curved as indicated at 68 so as to form retaining pockets for the springs 44. The lower forward part of the cage 32 is curved as indicated at 70 in Fig. 3 so as to accommodate the rebound absorption spring 46.

In operation when a buffing force or thrust is applied, the coupler 22 moves to the right in Figs. 1 and 2, the extremity of the shank 20

striking against the head 38 of the follower block 40. This forces the wedge block 50 to the right and because of the wedge surfaces 58 and the action of springs 44 there is a tendency to spread the friction blocks 52 outwardly, therefore exerting an enormous friction between their outer faces and the walls 56 of the cage. As the wedge blocks and friction blocks 52 continue their movement to the right, they, of course, compress the springs 44, thereby cushioning the blow or thrust. It is understood, of course, that when this action takes place, movement of the cage 32 is prevented by the stops 34 carried by the draft sills. While the springs 44 are being compressed by the buffing thrust, the spring 46 having been initially assembled under compression, expands. It is, therefore, clear that when the buffing force or thrust is relieved, the spring 46 will be effective to absorb any rebound shocks occasioned by the rapid expansion of the springs 44.

When a pulling force is applied to the coupler 20, the heel 28 of the yoke 16 will move the cage 32 to the left. This movement will be resisted by the shank 60 of the follower block 40. The springs 44 will be compressed as before. The wedge blocks 48 coacting with the friction blocks 52 will exert a frictional drag against the walls 52 of the cage.

As the cage continues its movement to the left, the spring 46 will expand so that if the pull is momentarily released, any shock occasioned by the quick expansion or rebound of springs 44 will be neutralized by said spring 46. When the draft gear is under pulling stress and springs 44 are fully compressed, the front wall 36 of the cage will engage the head 38 of the follower block 40 which in turn will transmit the pulling force to the draft sills through front stops 42. It is to be understood, of course, that in practice due to the uneven movement of railway cars that cage 32 will tend to float or "shuttle" back and forth between the stops 42 and 34. Such shuttling or hunting in the ordinary type of draft gear is noisy, causes severe shocks to be transmitted to the sills of the car and also subjects draft gear parts to destructive forces. These forces and noises are effectively neutralized in my improved double acting draft gear by the provision of the spring means 46 which is effective to cushion any blow caused by quick expansion of the springs 44 due to the momentary release of either the pull or buffing force.

While I have described quite specifically the details of the embodiment of the invention herein shown, it is not to be construed that I am limited thereto since various modifications may be made by those skilled in the art without departing from the invention as defined in the appended claims.

What I claim is:—

1. A double acting friction draft gear of the class described comprising a shiftable cage having friction blocks which slide longitudinally along opposite inner walls thereof, complementary wedge blocks shaped to coact with said friction blocks, respective springs interposed between said wedge blocks and opposite end portions of said cage tending to press the friction blocks against said inner cage walls, a draft member coacting with said cage, fixed back stops for limiting the buffing movement of said cage, front stops limiting the forward movement thereof, and a member interposed between the front stops and the end of said cage having a shank which engages one of said wedge blocks.

2. A double acting friction draft gear for a railway car including a member adapted to be shifted in opposite directions relatively to the car by forces acting in the direction of buff and the direction of pull on the draft gear, slidable friction blocks coacting with said member, a pair of wedge blocks engaging opposite sides of said friction blocks, and oppositely acting springs compressed between said wedge blocks and reacting against said member, one of said springs reacting against said member and one of said wedge blocks and adapted to resist, the buffing and draft forces and the other spring reacting against said member and the other of said wedge blocks adapted to absorb rebound shocks occasioned by the quick expansion of the first spring, a follower block having a shank which coacts with one of said wedge blocks, a draft element coacting with said member and a coupler shank coacting with said follower.

3. A double acting friction draft gear including a shiftable cage adapted to have draft and buffing forces applied thereto, stops limiting the shifting movement of said cage, friction blocks and wedge blocks in said cage, a follower member having a part engaging one of said wedge blocks and another part engaging one of said stops, and oppositely acting springs engaging said wedge blocks and forcing said friction blocks against the walls of said cage, said springs reacting against opposite end walls of said cage.

4. A double acting friction draft gear including a draft yoke, a cage coacting with said yoke and having respective pairs of friction and wedge blocks therein, a buffing member having a shank directly engaging one of said wedge blocks, one set of springs coacting with one of said wedge blocks and reacting against said cage and arranged to resist both draft and buffing forces and another set of springs surrounding said shank and coacting with one of said wedge blocks and reacting against said cage and arranged to resist the rebound of the parts oc-

casioned by the quick release of said first set of springs.

5. A double acting draft gear including a draft yoke, a cage shiftable in opposite directions and operatively associated with said yoke, friction blocks intermediate the ends of said cage, oppositely arranged wedge blocks coacting therewith, a compression spring between one end of said cage and one of said wedge blocks, another spring between the other end of said cage and the other wedge block, a follower block having a portion coacting with one of said wedge blocks, a stop limiting the movement of said follower block and a stop limiting the movement of said cage, and a coupler shank adapted to coact with said follower block.

6. A double acting friction draft gear of the character described comprising a shiftable cage having friction blocks which slide longitudinally along inner walls thereof, complementary wedge blocks shaped to coact with said friction blocks, oppositely acting springs interposed between said wedge blocks and opposite end portions of said cage tending to force the friction blocks against said inner cage walls, a draft member coacting with said cage, fixed back stops limiting the buffing movement of said cage, front stops limiting the forward movement thereof, a follower block between the front stops and the end of the cage having a portion which coacts with one of said wedge blocks, one of said springs being adapted to resist both buffing and draft forces and the other spring being adapted chiefly to absorb rebound shocks occasioned by the quick expansion of the first mentioned spring.

7. A draft gear of the character described including a longitudinally shiftable cage, stops limiting the longitudinal movements of said cage, a draft yoke operatively associated with the cage, complementary sets of friction and wedge blocks located within and shiftable relatively to the cage, oppositely acting springs coacting with the cage and with respective wedge blocks, a follower block having a shank normally coacting with one of the wedge blocks and a portion cooperating with one of said stops, one of said springs being adapted to resist both buffing and draft forces and the other spring being adapted to absorb rebound shocks occasioned by the quick expansion of the first mentioned spring.

In witness whereof, I have hereunto signed my name.

WILLIAM C. SLEEMAN.