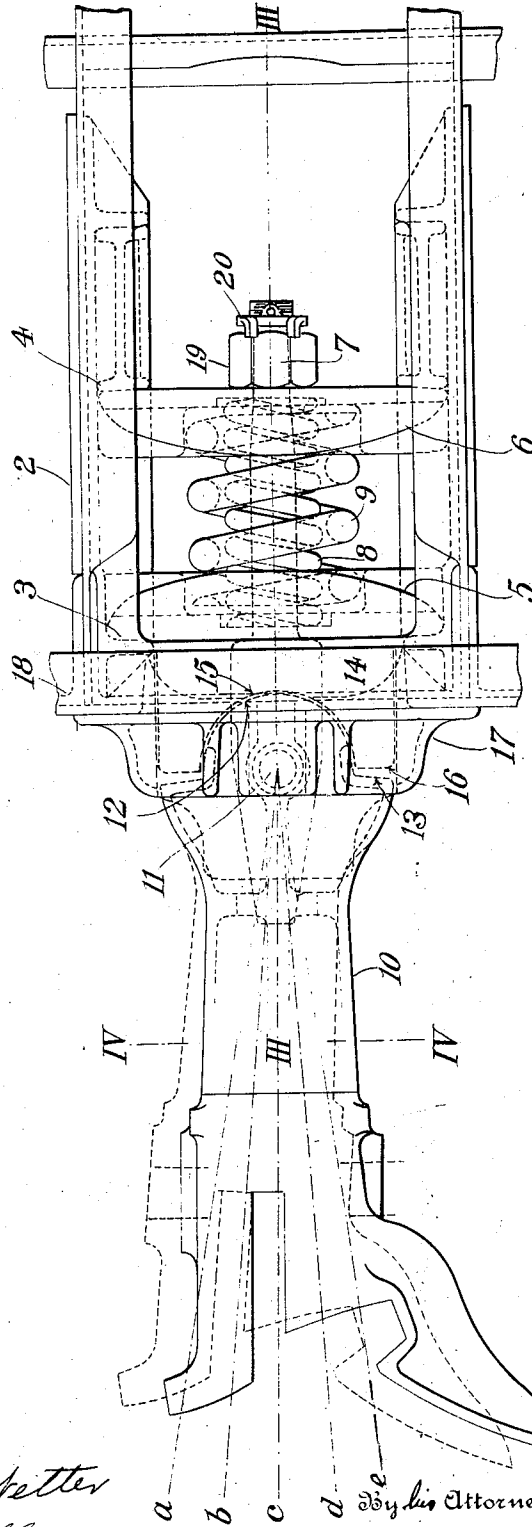


1,215,315.

J. WILLISON.
DRAFT RIGGING.
APPLICATION FILED JUNE 4, 1913.

Patented Feb. 6, 1917.
2 SHEETS—SHEET 1.

Fig. 1



Witnesses:

Raphael Better
C.D. Morrill

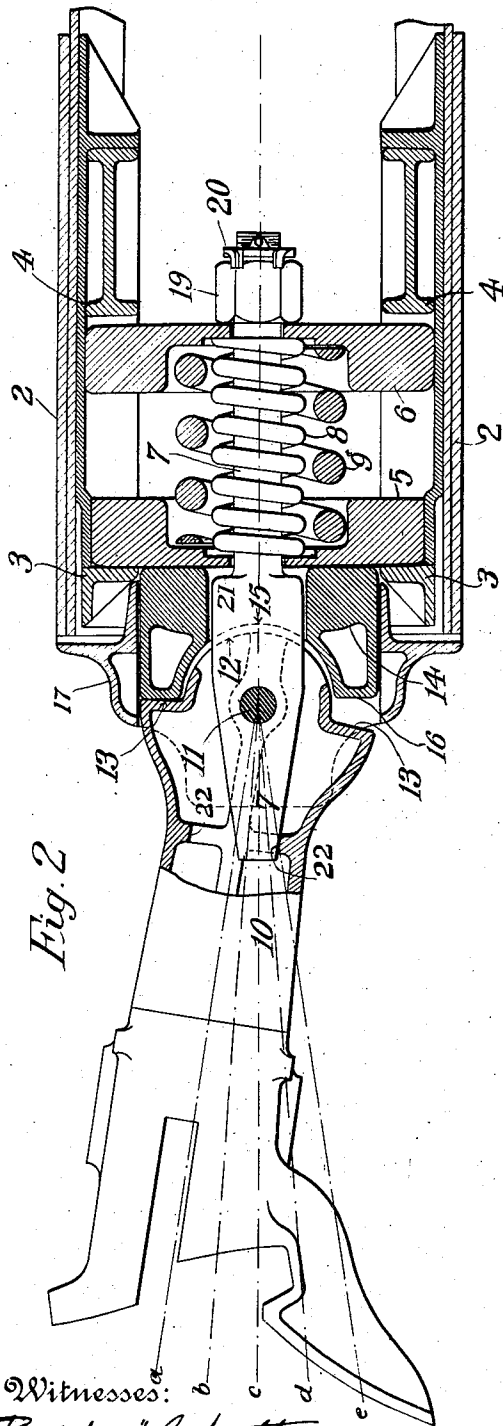
By his Attorney

Inventor
John Willison
Charles J. Ford

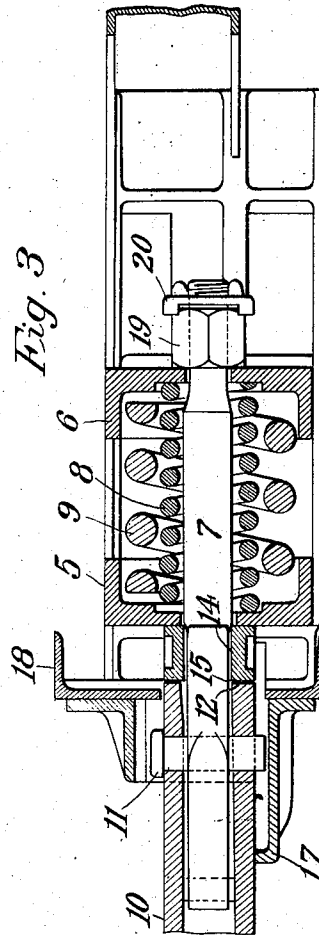
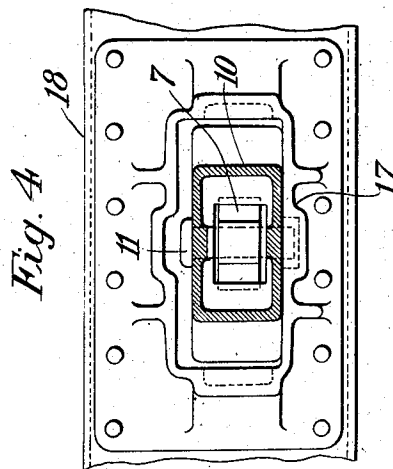
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DRAFT-RIGGING.

1,215,315.

Specification of Letters Patent.

Patented Feb. 6, 1917.

Application filed June 4, 1913. Serial No. 771,574.

To all whom it may concern:

Be it known that I, JOHN WILLISON, a subject of the King of Great Britain, and a resident of Derby, county of Derby, England, have invented new and useful Improvements in Draft-Rigging, of which the following is a specification, reference being had to the accompanying drawings, in which:—

Figure 1 is a plan of my improved device applied to the underframing of a car; Fig. 2 is a horizontal section thereof; Fig. 3 is a section on lines III—III of Fig. 1; and Fig. 4 is a section on lines IV—IV of Fig. 1.

My invention relates to draft rigging, and provides a device which permits the lateral movements necessary for coupling in car couplers of the type shown in my co-pending application, Serial No. 761890, filed April 18, 1913, and also the further lateral movements which may be necessary on curves. My improved device is also designed to absorb the usual draft and buffing shocks.

Referring to the drawings, 2 indicates the draft sills of a car, having stops 3 and 4 secured thereto against which the front follower 5 and the rear follower 6 respectively are designed to bear. The followers 5 and 6 are apertured for reception of the draft rod 7, which extends centrally therethrough. Mounted on the rod 7 is a pair of helical springs 8 and 9. The inner and lighter spring 8 is subjected to a slight initial compression and bears always against the followers 5 and 6, while the outer and heavier spring 9 is not under stress except during buffing or draft, as is later to be described.

The coupler shank 10 is connected with the draft rod 7 by the pivot pin 11, so as to permit the coupler to swing laterally for coupling engagement with an opposing coupler and for the necessary radial movement on curves. The rear end of the coupler shank has an arc-shaped portion 12, and on either side of this portion 12 are projections 13. In front of the follower 5 is a bearing block 14, also apertured for reception of the draft rod 7, and this block 14 has a concave recess 15 and shoulders 16, which cooperate with the arc-shaped portion 12 and the projections 13 respectively of the coupler shank. The casting 17 supports the coupler shank 10 and forms a guide in which the block 14 may slide longitudinally without lateral displacement, and is preferably secured to the

cross frame 18 which is attached to the car body. The draft rod 7, which passes centrally through the bearing block 14 and the followers 5 and 6, is secured by the nut 19 which bears against the rear follower 6. Any suitable nut lock, as 20, may be used for securing the nut 19 on the rod. The rod 7 has an enlarged head 21, apertured for the reception of the pivot pin 11, and against the rear side of which the front follower 5 is designed to bear. Within the shank of the coupler are stops 22 arranged to cooperate with the forward end of the rod 7 to prevent movement of the coupler beyond the lines *a* and *e* as shown in Fig. 2.

In coupling with or uncoupling from an opposing coupler, the clearance spaces between the projection 13 and the shoulders 16 will permit the coupler to swing laterally about the pivot 11 and between the lines *b* and *d* without compressing the spring 8. A continued lateral movement, as is shown in Fig. 2 will pull forwardly the rod 7 and with it the rear follower 6, or will drive rearwardly the block 14 and with it the front follower 5, thus compressing the spring 8, or both these movements may take place simultaneously, the followers being moved toward each other. The increased compression of the spring 8 will, when the force producing lateral displacement has ceased, serve to return the coupler to its normal coupling position; *i. e.*, to a position in which its central longitudinal plane coincides with or lies between the lines *b* and *d* shown in Figs. 1 and 2.

Sufficient clearance between the ends of the main spring 9 and the followers 5 and 6 is provided to permit lateral movement of the coupler between the lines *a* and *e* without compression of the spring 9 which is only brought into action in buffing or draft.

In Figs. 1 and 2, the lines *b*, *c* and *d* indicate the longitudinal center lines of the coupler, in the various positions it may assume, without affecting the initial position of the followers and springs of the draft rigging. If the lateral movement is extreme—that is so that the longitudinal central plane of the coupler shank moves laterally to either of the lines *a* or *e*, the followers 5 and 6 will be moved closer together, increasing the initial compression of the spring 8, but not affecting the spring 9.

This movement is caused by the pivotal action of either projection 13 against the corresponding shoulder 16, as is shown in Fig.

2. When a projection 13 strikes a shoulder 16, it pushes back the bearing block 14, or the pivot pin 11 draws forwardly the draft rod 7, or both these actions occur simultaneously, thus effecting a compression of the spring 8, which when released returns the coupler to its normal position.

When under draft the rod 7 transmits the draft pressure to the rear follower 6 through the nut 19, and these pressures are resisted by both the springs 8 and 9, which are held against forward movement by the front follower 5, which bears against the stops 3 secured to the car structure.

In buffing, the buffing stresses are transmitted from the arc-shaped portion 12 of the coupler butt to the block 14, and from the block 14 through the front follower 5 to the springs 8 and 9, which are held against rearward movement by the rear follower 6, which bears against the stops 4 which are immovable rearwardly with respect to the car structure. When the coupler is under either buffing or draft, it is released from the restraint exerted by the spring 8 against lateral movement, and is free to move laterally without restriction except from the stops 22 by reason of the fact that in buffing the rod 7 is relieved of stress and no longer prevents such lateral action, while in draft the coupler is pulled forwardly to such an extent that the projections 13 will not engage the shoulders 16 even when the coupler is deflected laterally to its extreme limits.

Various modifications may be made in the constructions which I have shown and described herein without departing from my invention.

What I claim is:

1. In draft rigging, in combination with a coupler adapted to couple by a free lateral movement, a draft member pivotally connected to the shank of the coupler, springs and followers encircling said draft member, the coupler in normal coupling position being free to angle laterally relative to the central member to a limited extent unrestrained by either spring, one of said springs being at all times under compression and acting to return the coupler into the normal coupling position, and the other of said springs being under compression only during buffing and draft.

2. In draft rigging, in combination with a coupler adapted to couple by a free lateral pivotal movement, a draft member pivotally connected to the shank of said coupler, springs and a member intermediate the springs and coupler, shoulders upon the coupler shank in spaced relation to shoulders upon the intermediate member adapted to limit the amount of free lateral movement

of the coupler, the shoulders on the coupler shank and the shoulders on said member being normally out of contact with each other.

3. In draft rigging, in combination with a coupler adapted to couple by a free lateral pivotal movement, a draft member pivotally connected to the shank of the coupler, springs and followers in connection with said draft member, said draft member engaging the coupler shank to limit the coupler from an excessive lateral swing in either direction.

4. In shock absorbing mechanism, a central member having a plurality of springs mounted thereon and having a pivoted engagement with the draft member, followers on the central member, and a separate longitudinally movable bearing block between the front follower and the draft member, held against forward movement when in normal position, said bearing block having surfaces cooperating with corresponding surfaces on the draft member, said bearing block surfaces lying substantially in a plane passing through the point of pivotal engagement at right angles to the central member, said bearing block being also adapted to be driven rearwardly against the front follower by either an excessive lateral or a rearward longitudinal movement of the draft member.

5. In shock absorbing mechanism, a laterally swinging draft member, a central member having a pivoted engagement with the draft member, springs mounted on the central member, a longitudinally movable member in engagement with the draft member and held against forward movement when in normal position, shoulders on the movable member, out of line with the central longitudinal plane of the mechanism, said shoulders forming limits for the free lateral movement of the draft member and fulcrums against which the draft member bears under excessive lateral movements to compress one of said springs.

6. A draft rigging comprising front and rear followers, a spring between said followers, a draft rod, a draft member pivoted for a limited amount of free movement on said draft rod, a bearing block in contact with the front follower, projections on the shank of said draft member, and shoulders on said bearing block adapted to cooperate with said projections, said shoulders and projections being out of contact when the draft member is in central position and being adapted to contact when said draft member is displaced laterally beyond the limits of its normal free movement, to compress the spring.

7. A draft rigging comprising a draft rod, front and rear followers, a normally inert spring, a normally compressed spring, a coupler pivoted to said draft rod, lateral projections on said coupler, and longitudi-

nally movable abutments adapted to cooperate with said projections, said projections and abutments being out of contact during the limited free lateral movement of said coupler, and either projection being adapted to contact with an abutment upon further lateral movement, whereby the normally compressed spring is further com-

pressed to return said coupler to a position within the limits of its free lateral movement. 10

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