

No. 700,422.

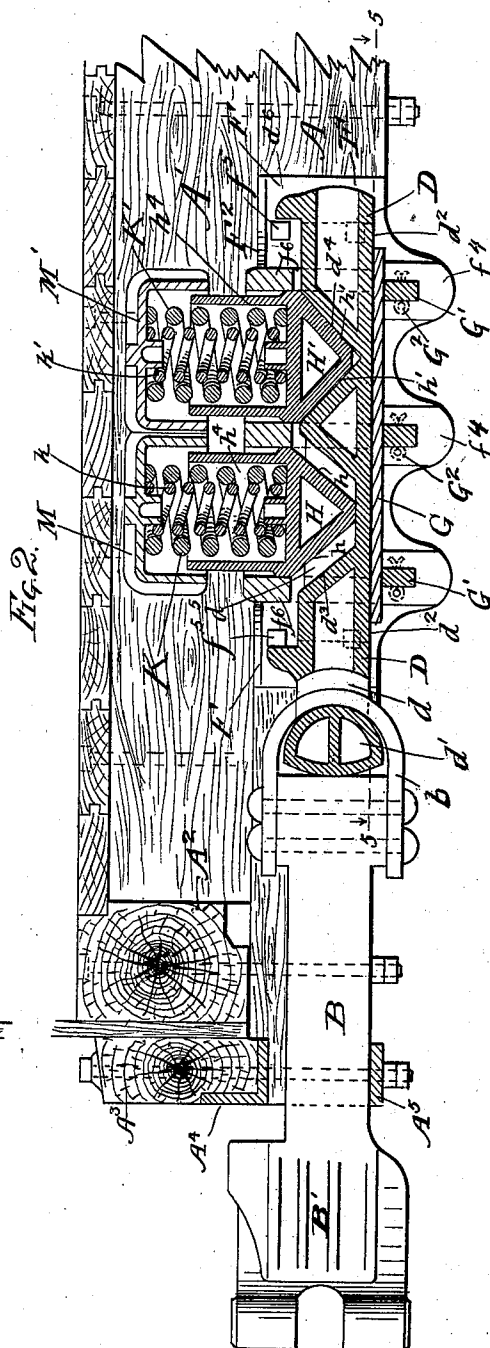
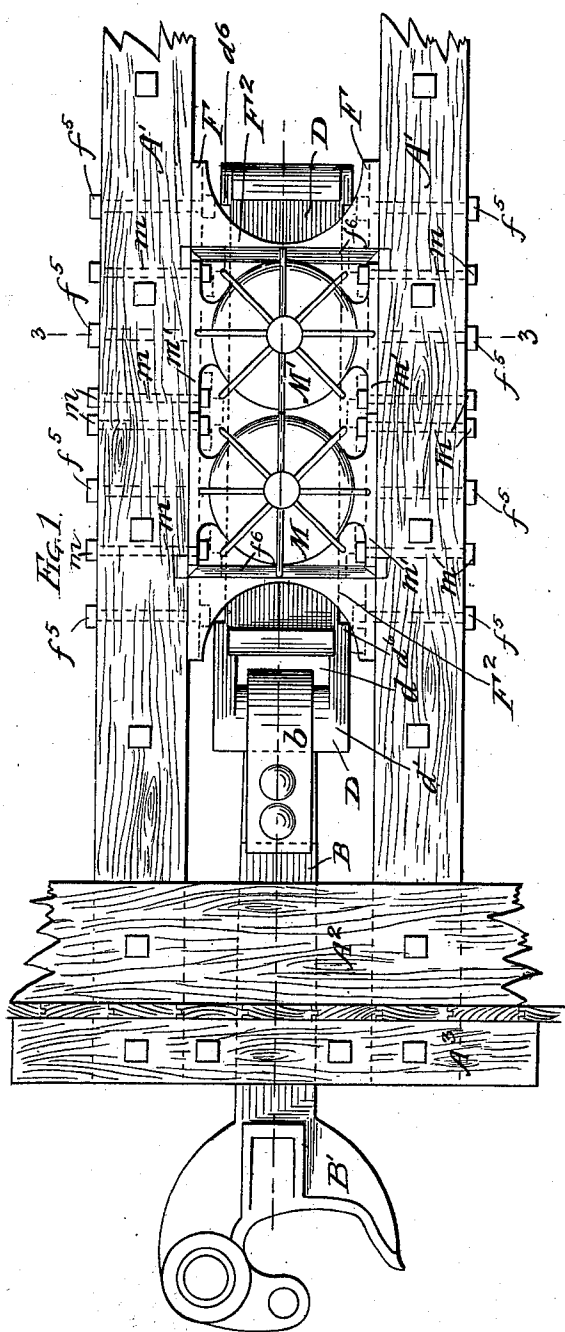
Patented May 20, 1902.

J. J. HENNESSEY & P. N. MOORE.
FRICTION DRAFT RIGGING FOR RAILWAY CARS.

(Application filed Mar. 12, 1902.)

(No Model.)

4 Sheets—Sheet 1.



WITNESSES:
J. B. Townsend,
A. W. Munday.

INVENTORS
John J. Hennessey & Peter N. Moore
BY
Munday, Evans & Adcock
ATTORNEYS

No. 700,422.

Patented May 20, 1902.

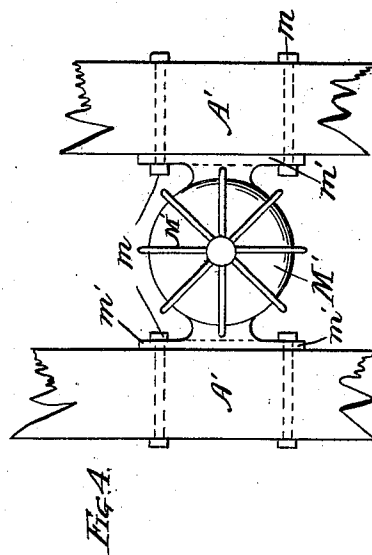
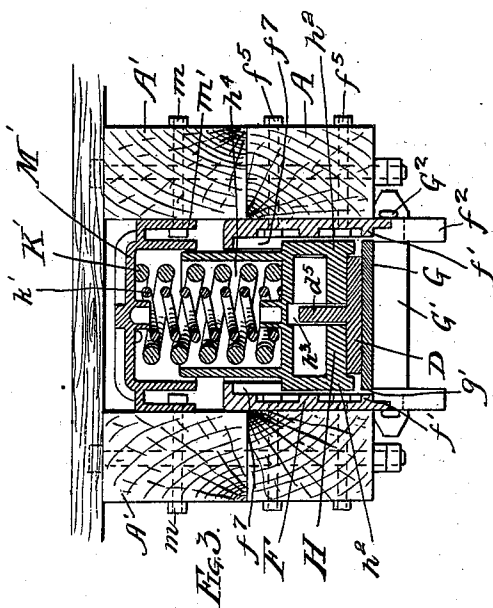
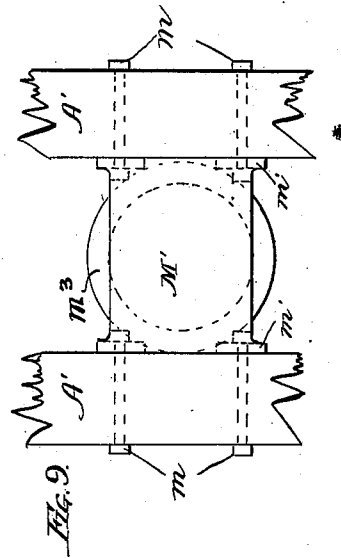
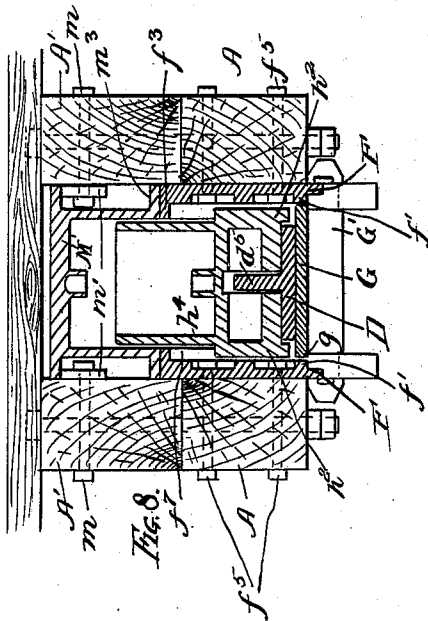
J. J. HENNESSEY & P. N. MOORE.

FRICION DRAFT RIGGING FOR RAILWAY CARS.

(Application filed Mar. 12, 1902.)

(No Model.)

4 Sheets—Sheet 2.



WITNESSES:
F. B. Townsend
A. W. Munday,

INVENTORS
John J. Hennessy & B. N. Moore.
BY Munday, Evans & Adams
ATTORNEYS

No. 700,422.

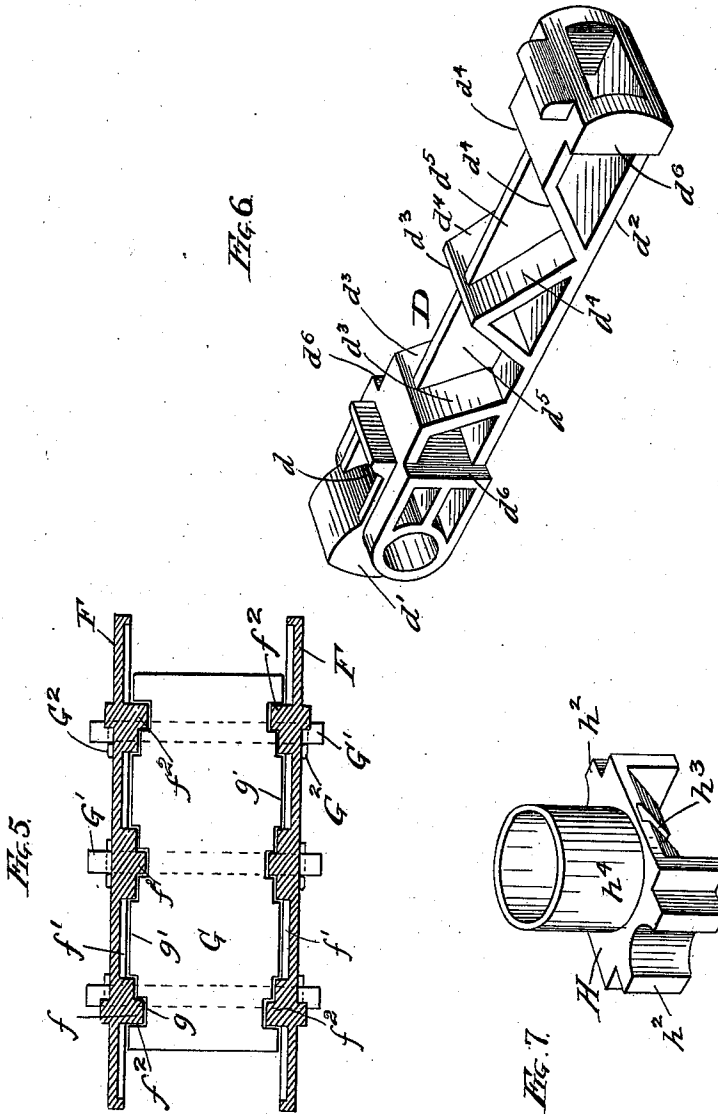
Patented May 20, 1902.

J. J. HENNESSEY & P. N. MOORE.
FRICTION DRAFT RIGGING FOR RAILWAY CARS.

(Application filed Mar. 12, 1902.)

(No Model.)

4 Sheets—Sheet 3.



WITNESSES:
F. B. Townsend
H. W. Munday.

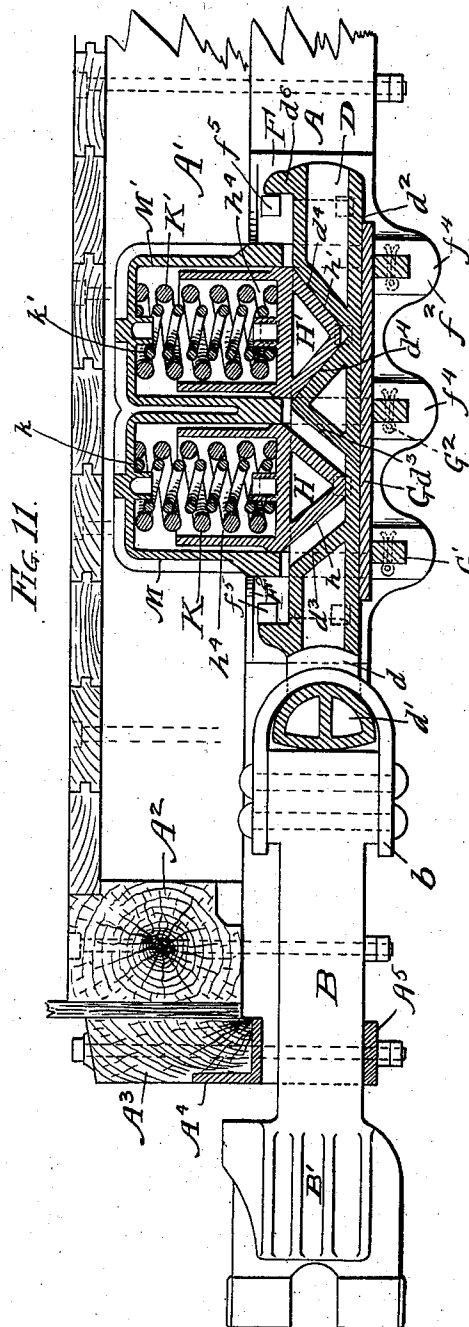
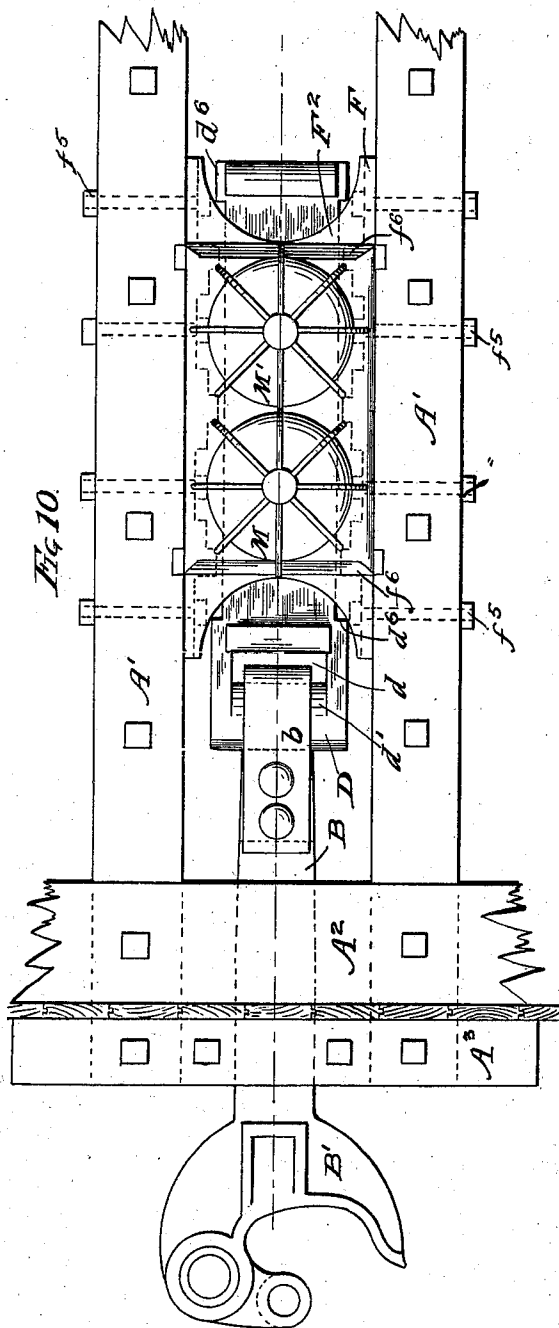
John J. Hennessey & Peter N. Moore. INVENTORS
BY
Munday, Everts & Adcock
ATTORNEYS

J. J. HENNESSEY & P. N. MOORE.
FRICION DRAFT RIGGING FOR RAILWAY CARS.

(Application filed Mar. 12, 1902.)

(No Model.)

4 Sheets—Sheet 4.



WITNESSES:
F. B. Townsend,
H. W. Munday,

John J. Hennessy, & Peter N. Moore. INVENTORS
BY
Munday, Ewart & Adesick ATTORNEYS

UNITED STATES PATENT OFFICE.

JOHN J. HENNESSEY AND PETER N. MOORE, OF MILWAUKEE, WISCONSIN,
ASSIGNORS, BY DIRECT AND MESNE ASSIGNMENTS, TO SAID HENNESSEY
AND WILLIAM H. MINER, OF CHICAGO, ILLINOIS.

FRICITION DRAFT-RIGGING FOR RAILWAY-CARS.

SPECIFICATION forming part of Letters Patent No. 700,422, dated May 20, 1902.

Application filed March 12, 1902. Serial No. 97,820. (No model.)

To all whom it may concern:

Be it known that we, JOHN J. HENNESSEY and PETER N. MOORE, citizens of the United States, residing in Milwaukee, in the county of Milwaukee and State of Wisconsin, have
5 invented a new and useful Improvement in Friction Draft-Rigging for Railway-Cars, of which the following is a specification.

Our invention relates to friction draft-rigging for railway-cars.

The object of our invention is to provide a friction draft-rigging of a simple and economical, safe, strong, efficient, and durable construction and having its frictional resistance
15 surfaces or devices directly behind the draw-bar in the line of draft and between the draft-timbers or center sills of the car without necessitating any cutting or weakening of the draft-timbers or sills and which will operate
20 to effectually and properly cushion either light or heavy blows or shocks in both pulling and buffing, and which will at the same time automatically and certainly and gradually release or return the draw-bar to position
25 without sticking of the frictional surfaces or devices, however great or violent may be the strains or blows driving the parts together.

Our invention consists in the means employed to accomplish this important object or
30 result—that is to say, it consists, essentially, in connection with the draw-bar of the coupler and the draft-timbers or center sills of the car and stationary side plates or stop-castings mounted between the draft-timbers or center
35 sills and secured thereto, of a sliding frictional draft-iron or extension in line with the draw-bar and having on one of its horizontal sides, either upper or lower, a straight friction-face and on its opposite side double-incline friction-faces, a stationary friction-plate
40 directly behind the draw-bar and in the central line of draft in sliding frictional engagement with the straight friction-face of the draft-iron or draw-bar extension, a transversely-movable friction-block having corresponding double-incline friction-faces, and a transversely-arranged spring acting against
45 said friction-block and centrally pressing the draft-iron against said stationary friction-plate.

It further consists in providing the draft-rigging with a second spring acting against a second friction-block having double-incline friction-faces cooperating with further double-incline friction-faces on the draft-iron.

It further consists in providing one of said friction-blocks with double-incline friction-faces having a less or sharper angle than those on the other friction-block and in so constructing and combining the parts that one
60 of the springs comes into action after the other is partly compressed, the spring which acts against the friction-block having the greater angle coming last into action, so that the lighter shocks or blows of switching and
65 ordinary use may be first resisted and cushioned by the spring whose friction-block is more easily compressed by reason of the less angle of the friction-faces thereof.

Our invention also consists in the novel
70 construction of parts and devices and in the novel combinations of parts and devices herein shown or described.

As in our invention the stationary friction-plate, the transversely-movable friction-blocks and their springs, and the draft-iron or draw-bar extension, with its straight friction-face and double-incline friction-faces, are all directly behind the draw-bar and in
75 the central line of draft, no unequal lateral twisting or wrenching strain is produced upon the draft-timbers or center sills or the side plates or stop-castings secured thereto or upon other parts of the draft-rigging, and the pulling and buffing strains, shocks, or blows,
85 which sometimes are very violent, are all taken, exerted, or resisted centrally upon the car, thus securing safety, strength, efficiency, and durability for the draft-rigging.

As in our invention the transversely-movable friction-block, having the double-incline friction-faces, under the action of its spring presses the draft-iron centrally against the stationary friction-plate on the opposite side of the draft-iron itself, the side plates or
95 stop-castings, the stationary friction-plate, the friction-block and its spring are all mounted between the draft-timbers or center sills without spreading them farther apart or altering their customary and approved shape

or relation necessary for the strength and security of the car and draft-rigging as a whole.

As in our invention the two independently-movable friction-blocks, arranged the one directly behind the other, are adapted to come into action successively or the one after the spring of the other is partly compressed and as the friction-block coming first into action has its friction-faces of a less or sharper angle than the other, this enables the draft-rigging to softly and properly cushion the light strains, shocks, or blows of switching and ordinary usage and at the same time effectually properly cushion and resist the most violent and sudden shocks or blows by the reinforced action of the friction-block having the friction-faces of the greater angle.

As in our invention the sliding friction draft-iron or draw-bar extension has one longitudinally-straight friction side or face engaging a stationary friction-plate, against which it is pressed by the power of the transversely-arranged spring or springs acting against a friction-block having inclined faces of a great angle, preferably about forty-five degrees, or an angle exceeding any possible angle of rest for the character of the friction-faces employed, this spring-pressed great angle friction-block will operate to always insure the certain and free return movement of the draft-iron and draw-bar connected thereto, however great or violent may be the blow or shock on or against the draw-bar and driving or forcing the incline friction-faces against each other, while at the same time the rebound or return movement of the draft-iron or draw-bar is always made gradual and easy by reason of the cooperating action of the straight friction-face on the opposite side of the draw-bar with the stationary friction-plate. The cooperative action of the large and small angle friction-blocks also aids in accomplishing this result of securing a certain but gradual return movement of the draft-iron and draw-bar without danger of sticking, as the friction-block having the greater or the preferably about forty-five-degree angle insures the starting of the return movement of the draft-iron, while the friction produced by the spring acting against the block having the lesser angle to its friction-faces tends to prevent a quick, violent, or sudden return movement.

The double-incline friction-faces on the draft-iron are preferably inwardly projecting and those on the transversely-movable friction-blocks outwardly projecting, as shown in the drawings, as this enables the sliding draft-iron to be made more compact and symmetrical in shape and to economize room or space.

The stationary friction-plate is preferably located on the lower side instead of the upper side of the draft-iron, as shown in the drawings, as this utilizes the space beneath the car-floor and between the sills for the transversely-arranged springs and prevents the

springs from projecting below the draft-iron and draw-bar, as they would otherwise do.

In the accompanying drawings, forming a part of this specification, Figure 1 is a plan view of a device embodying our invention. Fig. 2 is a central vertical section; Fig. 3, a cross-section on line 3 3 of Fig. 1; Fig. 4, a detail plan view. Fig. 5 is a detail horizontal section taken on line 5 5 of Fig. 2; Fig. 6, a detail perspective view of the friction draft-iron or draw-bar extension; Fig. 7, a detail perspective view showing one of the friction-blocks. Fig. 8 is a vertical cross-section illustrating a slightly-modified construction; Fig. 9, a plan view of same. Fig. 10 is a plan view; and Fig. 11, a central vertical longitudinal section, illustrating a modification.

In the drawings like letters of reference refer to like parts throughout the figures.

In said drawings, A represent the draft-timbers, A' A' the center sills, A² the cross-sill, A³ the buffer-block, A⁴ the buffer-plate, and A⁵ the carry-iron of a railway-car, these parts being all of any suitable or customary construction.

B is the draw-bar of the coupler B'.

D is a sliding friction draw-bar extension or draft-iron directly in line with the draw-bar. This friction draw-bar extension or draft-iron D is preferably made in a separate piece from the draw-bar and is preferably connected thereto by a clip, yoke, or strap *b*, passing through an eye *d* in the draw-bar extension or draft-iron D, the head *d'* of the eye having a rounded face to allow a limited up-and-down or vibrating movement to the coupler and draw-bar. The loose fit of this connection also allows for the necessary lateral play of the draw-bar and coupler, and the draw-bar extension or draft-iron D has a straight friction surface or face *d*² on one of its horizontal sides, preferably its lower side.

F F are the side plates or stop-castings, fitting between the draft-timbers or center sills and securely attached thereto by bolts *f*⁵, the same being both preferably cast in one piece or united by the cross-webs F².

G is a stationary friction-plate directly behind the draw-bar and in the central line of draft, the straight friction-face *d*² of the draw-bar extension or draft-iron D being in sliding frictional engagement therewith. This stationary friction-plate receives and transmits to the draft-timbers or center sills a large portion of the pulling and buffing strains transmitted to it from the draw-bar through the friction draw-bar extension or draft-iron and requires to be securely fixed or anchored in position on the car. It may be so anchored by any suitable means. This, however, may preferably be done by providing the friction-plate at its edges with notches, recesses, or projections *g g'*, engaging corresponding notches, recesses, or projections *f' f*² on the side plates, frame, or stop-castings F. The stationary friction-plate G is preferably made in a separate piece from the side plates,

frame, or stop-castings F and removably supported by cross-bars G', having keys G². This enables the draw-bar extension or draft-iron and other parts to be readily inserted and removed from the car. The cross-bars G' extend through suitable holes or recesses in the lower projecting wings f⁴ of the side plates, frame, or stop-castings F.

The draw-bar extension or draft-iron D has on its opposite side from the stationary friction-plate G two double-incline friction-faces d³ d³ and d⁴ d⁴, the latter being at a less angle than the former, the angle of the former being preferably about forty-five degrees and that of the latter about thirty degrees.

H and H' are a pair of transversely-movable friction-blocks having double-incline friction-faces h h and h' h', respectively, corresponding to and bearing against the double-incline friction-faces on the draft-iron. The friction-blocks H and H' are rectangular in shape and provided with guide projections h² at their ends which fit in the vertical guideways or recesses f⁷ in the frame or stop-casting F, so that the friction-blocks, while capable of moving transversely or vertically in respect to the draw-bar, are securely held in position against longitudinal movement with the draw-bar or its extension or draft-iron. To maintain the strength of the draw-bar extension or draft-iron, it is provided with a central longitudinal web d⁵, and the friction-blocks H H' are provided with corresponding grooves or channels h³. Each of the friction-blocks H and H' is also furnished with a seat h⁴ for the spring, the seat consisting, preferably, of an upwardly-projecting rim.

K and K' are transversely-arranged springs acting against the friction-blocks H and H', respectively, arranged in the central line of draft or in the vertical plane thereof and serving to press the friction draw-bar extension or draft-iron D centrally against the stationary friction-plate G, and thus cause the movement of the draw-bar to be 'cushioned' by the combined resistance of the springs and the friction of the draft-iron or extension D against the stationary friction-plate G and of its incline friction-faces against the incline friction-faces of the transversely-movable friction-blocks H and H'. Inside of the main springs K and K' smaller supplemental springs k and k' are preferably arranged. The upper ends of the springs bear against spring-seats M M', which are securely fixed in position, preferably by bolts m extending through the center sills of the car and through flanges or projections m' on the spring-seats.

The spring K is arranged to come into action under both pulling and buffing strains subsequently to the spring K'—that is to say, after the spring K is partly compressed. This is preferably accomplished by arranging the double inclines d³ d³, which coact with the block H, somewhat farther apart than the double inclines d⁴ d⁴, which coöperate

with the other friction-block H', so that the draw-bar extension or draft-iron D may thus have some longitudinal movement before the spring K has begun to be compressed. This enables us to make both springs K and K' of the same length, and we consider this a preferable construction to making one of the springs shorter than the other, which would be necessary if the double inclines for both friction-blocks were the same distance apart. To limit the extent of the longitudinal movement of the draw-bar and its extension or draft-iron D, we provide the latter with shoulders or stops d⁶, which engage corresponding shoulders or stops f⁶ on the stationary frame or casting F.

In the modification illustrated in Figs. 8 and 9 the spring seats or supports M for the upper ends of the springs to bear against are provided with flanges or shoulders m², which abut against corresponding flanges or shoulders f³ on the frame or casting F.

In the modification illustrated in Figs. 10 and 11 the spring-seats M M' are shown as being made integral with the frame or casting F.

For convenience we have illustrated our invention as being applied to the more common construction of car, having both center sills and draft-timbers. In cases where the draft-timbers are omitted or metal sills are employed the center sills are somewhat deeper and the side plates or stop-castings F F fit between and are secured directly thereto and may project somewhat below the lower edge of the center sills, to give room for the draw-bar and draft-iron without too deeply notching or recessing the lower edge of the front or cross sill A².

We claim—

1. In a railway draft-rigging, the combination of the draft-timbers or center sills, of side plates or stop-castings fitting between and secured thereto, a draw-bar having an extension or draft-iron in line therewith fitting between said side plates or stop-castings, a stationary friction-plate in line with the draw-bar in frictional sliding engagement with one of the horizontal sides of said draw-bar extension or draft-iron, double-incline friction-faces on the opposite side of said draft-iron from said stationary friction-plate, a transversely-movable friction-block having corresponding double-incline friction-faces, and a transversely-arranged spring acting against said friction-block and centrally pressing said draft-iron against said stationary friction-plate, substantially as specified.

2. In a railway draft-rigging, the combination with the draft-timbers or center sills, of side plates or stop-castings fitting between and secured thereto, a draw-bar having a draft-iron or extension in line therewith and fitting between said side plates or stop-castings, a stationary friction-plate in line with the draw-bar and secured to said side plates or stop-castings, double-incline friction-faces

on the opposite side of the draft-iron from the said stationary friction-plate, a transversely-movable friction-block having corresponding double-incline friction-faces, and a transversely-arranged spring acting against said friction-block and centrally pressing said draft-iron against said stationary friction-plate, substantially as specified.

3. In a railway draft-rigging, the combination with the draft-timbers or center sills, of side plates or stop-castings fitting between and secured thereto, a draw-bar and a draft-iron in line therewith and fitting between said side plates or stop-castings, a stationary friction-plate in line with the draw-bar and in frictional sliding engagement with one of the sides of said draft-iron, a plurality of double-incline friction-faces on the opposite side of the draft-iron from the said stationary friction-plate, a plurality of transversely-movable friction-blocks each having corresponding double-incline friction-faces and a plurality of transversely-arranged springs acting against said transversely-movable friction-blocks and centrally pressing said draft-iron against said stationary friction-plate, substantially as specified.

4. In a railway draft-rigging, the combination of a draw-bar with a draft-iron in line therewith, a stationary friction surface or plate in line with the draw-bar and in frictional sliding engagement with one of the sides of the draft-iron, double-incline friction-faces on the opposite side of the draft-iron from said stationary friction-plate, a transversely-movable friction-block having corresponding double-incline friction-faces, and a transversely-arranged spring acting against said friction-block and centrally pressing said draft-iron against said stationary friction surface or plate, substantially as specified.

5. In a railway draft-rigging, the combination with a draw-bar, of a draft-iron in line therewith, a stationary friction surface or plate in line with the draw-bar and in sliding engagement with one of the sides of the draft-iron, a plurality of double-incline friction-faces on the opposite side of the draft-iron from said stationary friction-plate, a plurality of transversely-movable friction-blocks each having corresponding double-incline friction-faces, and a plurality of transversely-arranged springs acting against said transversely-movable friction-blocks and centrally pressing said draft-iron against said stationary friction surface or plate, substantially as specified.

6. In a railway draft-rigging, the combination with a draw-bar of a draft-iron in line therewith, a stationary friction surface or plate in line with the draw-bar and in sliding engagement with one of the sides of the draft-iron, a plurality of double-incline friction-faces on the opposite side of said draft-iron from said stationary friction-plate, a plurality of transversely-movable friction-blocks each having corresponding double-incline friction-

faces and a plurality of transversely-arranged springs acting against said transversely-movable friction-blocks and centrally pressing said draft-iron against said stationary friction surface or plate, the double inclines on one of said friction-blocks having a snug fit and on the other a loose fit with the double inclines on the draft-iron so that one of the springs may be partially compressed before the other comes into action in both pulling and buffing, substantially as specified.

7. In a railway draft-rigging, the combination with a draw-bar, of a draft-iron in line therewith, a stationary friction surface or plate in line with the draw-bar and in sliding engagement with one side of said draft-iron, a plurality of double-incline friction-faces on the opposite side of said draft-iron from said stationary friction-plate, a plurality of transversely-movable friction-blocks each having corresponding double-incline friction-faces and a plurality of transversely-arranged springs acting against said transversely-movable friction-blocks and centrally pressing said draft-iron against said stationary friction surface or plate, the double-incline friction-faces of and for one of said blocks being of a less angle than the double-incline friction-faces of and for the other friction-block, substantially as specified.

8. In a railway draft-rigging, the combination with a draw-bar, of a draft-iron in line therewith, a stationary friction surface or plate in line with the draw-bar and in sliding engagement with one side of said draft-iron, a plurality of double-incline friction-faces on the opposite side of said draft-iron from said stationary friction-plate, a plurality of transversely-movable friction-blocks each having corresponding double-incline faces and a plurality of transversely-arranged springs acting against said transversely-movable friction-blocks and centrally pressing said draft-iron against said stationary friction surface or plate, one of said friction-blocks coming into action after the spring of the other is partially compressed and the double-incline friction-faces of the block coming last into action, being of a greater angle than those of the other friction-block, substantially as specified.

9. In a railway draft-rigging, the combination with a frame or casting fitting between and secured to the draft-timbers or center sills of a car and having thereon a stationary friction surface or plate, of a draw-bar, a draft-iron in line with the draw-bar and having one of its sides in sliding engagement with said friction surface or plate on said frame or casting and having on its opposite side double-incline friction-faces, a transversely-movable friction-block having corresponding double-incline friction-faces and a transversely-arranged spring acting against said friction-block and centrally pressing the draft-iron against said stationary friction surface or plate on the housing, said spring, friction-

block, draft-iron and stationary friction surface or plate being all directly behind the draw-bar and in the line of draft, substantially as specified.

10. In a railway draft-rigging, the combination with a frame having thereon a horizontal friction surface or plate of a draw-bar, a draft-iron in line with the draw-bar and having its lower side in sliding frictional engagement with said stationary friction surface or plate on the housing and provided on its opposite side with a pair of double-incline friction-faces, a pair of transversely-movable friction-blocks having corresponding double-incline friction-faces and vertically-arranged springs acting against said friction-blocks and centrally pressing the draft-iron against said stationary friction surface or plate on the housing, said springs, friction-blocks, draft-iron and stationary friction-surface on the frame being all directly behind the draw-bar in the line of draft, substantially as specified.

11. In a railway draft-rigging, the combination with a draft-iron in line with the draw-bar and having a straight friction-face on its lower side, and double-incline friction-faces on its upper side, a stationary straight friction-plate supporting the draft-iron and in sliding frictional engagement therewith; a transversely-movable friction-block having double-incline friction-faces in engagement with said friction-faces on the draft-iron; and a transversely-arranged spring acting against said friction-block and centrally pressing said draft-iron against said stationary friction-plate, said draft-iron, friction-plate, friction-block and spring being all directly behind the draw-bar and in the line of draft and adapted to be mounted between the draft-timbers or center sills of the car, substantially as specified.

12. In a railway draft-rigging, the combination of the draft-timbers or center sills, of side plates or stop-castings fitting between and secured thereto, a draw-bar having an extension or draft-iron in line therewith fitting between said side plates or stop-castings, a stationary friction-plate in line with the draw-bar in frictional sliding engagement with one of the horizontal sides of said draw-bar extension or draft-iron, double-incline friction-faces on the opposite side of said draft-iron from said stationary friction-plate, a transversely-movable friction-block having corresponding double-incline friction-faces, and a transversely-arranged spring acting against said friction-block and centrally pressing said draft-iron against said stationary friction-plate, said stationary friction-plate being removably secured to the side plates or stop-castings and having notches or projections at its edges engaging corresponding notches or projections on the stop-castings, substantially as specified.

13. In a railway draft-rigging, the combina-

tion of the draft-timbers or center sills, of side plates or stop-castings fitting between and secured thereto, a draw-bar having an extension or draft-iron in line therewith fitting between said side plates or stop-castings, a stationary friction-plate in line with the draw-bar in frictional sliding engagement with one of the horizontal sides of said draw-bar extension or draft-iron, double-incline friction-faces on the opposite side of said draft-iron from said stationary friction-plate, a transversely-movable friction-block having corresponding double-incline friction-faces, and a transversely-arranged spring acting against said friction-block and centrally pressing said draft-iron against said stationary friction-plate, said side plates or stop-castings having guideways in which said friction-block reciprocates transversely to the draft-iron, substantially as specified.

14. In a railway draft-rigging, the combination with the draft-timbers or center sills, of side plates or stop-castings fitting between and secured thereto, a draw-bar and a draft-iron in line therewith and fitting between said side plates or stop-castings, a stationary friction-plate in line with the draw-bar and in frictional sliding engagement with one of the sides of said draft-iron, a plurality of double-incline friction-faces on the opposite side of the draft-iron from the said stationary friction-plate, a plurality of transversely-movable friction-blocks each having corresponding double-incline friction-faces and a plurality of transversely-arranged springs acting against said transversely-movable friction-blocks and centrally pressing said draft-iron against said stationary friction-plate, said friction-blocks being independently movable and the side plates or stop-castings having a separate guideway for each of said blocks, substantially as specified.

15. In a railway draft-rigging, the combination of a draw-bar with a draft-iron in line therewith, a stationary friction surface or plate in line with the draw-bar and in frictional sliding engagement with one of the sides of the draft-iron, double-incline friction-faces on the opposite side of the draft-iron from said stationary friction-plate, a transversely-movable friction-block having corresponding double-incline friction-faces, and a transversely-arranged spring acting against said friction-block and centrally pressing said draft-iron against said stationary friction surface or plate, said stationary friction-plate being removably secured to the side plates or stop-castings and having shoulders or stops engaging corresponding shoulders or stops on the side plates or stop-castings, substantially as specified.

16. In a railway draft-rigging, the combination with a draw-bar, of a draft-iron in line therewith, a stationary friction surface or plate in line with the draw-bar and in sliding engagement with one of the sides of the draft-

iron, a plurality of double-incline friction-faces on the opposite side of the draft-iron from said stationary friction-plate, a plurality of transversely-movable friction-blocks each having corresponding double-incline friction-faces, and a plurality of transversely-arranged springs acting against said transversely-movable friction-blocks and centrally pressing said draft-iron against said stationary friction surface or plate, said friction-blocks each having a rectangular base fitting corresponding guideways in the side plates or stop-castings, substantially as specified.

17. In a railway draft-rigging, the combination with a draw-bar, of a draft-iron in line therewith, a stationary friction surface or plate in line with the draw-bar and in sliding engagement with one of the sides of the draft-iron, a plurality of double-incline friction-faces on the opposite side of the draft-iron from said stationary friction-plate, a plurality of transversely-movable friction-blocks each having corresponding double-incline friction-faces, and a plurality of transversely-arranged springs acting against said transversely-movable friction-blocks and centrally pressing said draft-iron against said stationary friction surface or plate, said friction-blocks each having a rectangular base fitting corresponding guideways in the side plates or stop-castings, and provided with a circular

rim to receive the spring, substantially as specified.

18. In a railway draft-rigging, the combination with a draw-bar, of a draft-iron in line therewith, a stationary friction surface or plate in line with the draw-bar and in sliding engagement with one of the sides of the draft-iron, a plurality of double-incline friction-faces on the opposite side of the draft-iron from said stationary friction-plate, a plurality of transversely-movable friction-blocks each having corresponding double-incline friction-faces, and a plurality of transversely-arranged springs acting against said transversely-movable friction-blocks and centrally pressing said draft-iron against said stationary friction surface or plate, said friction-blocks each having a rectangular base fitting corresponding guideways in the side plates or stop-castings and said stationary friction-plate being removably secured to the side plate or stop-castings, and having shoulders or stops engaging corresponding shoulders or stops on the side plates or stop-castings, substantially as specified.

JOHN J. HENNESSEY.
PETER N. MOORE.

Witnesses:

JOHN J. CROWLEY,
JAMES E. MEHAN.