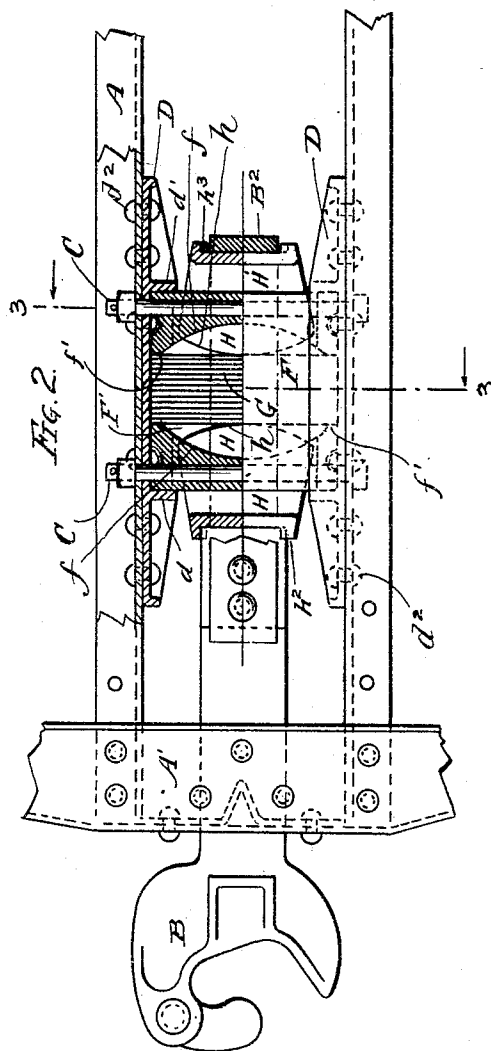
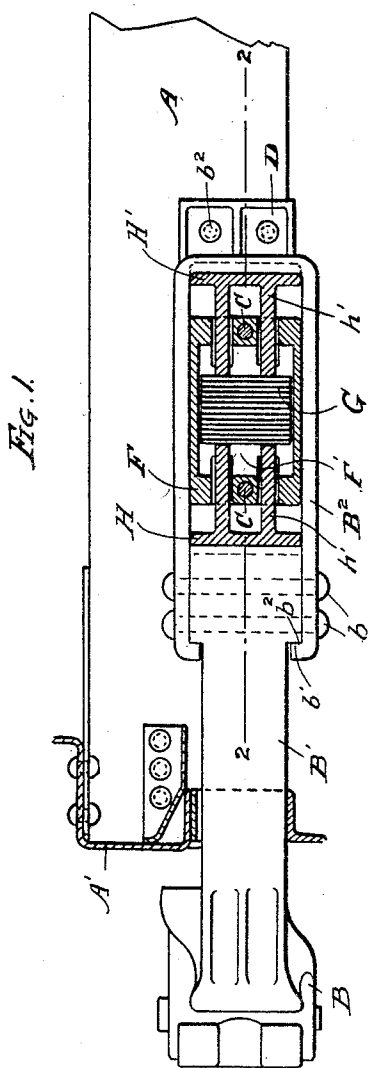


No. 784,697.

PATENTED MAR. 14, 1905.

J. F. O'CONNOR.
DRAFT RIGGING FOR RAILWAY CARS.
APPLICATION FILED DEC. 24, 1904.

2 SHEETS—SHEET 1.

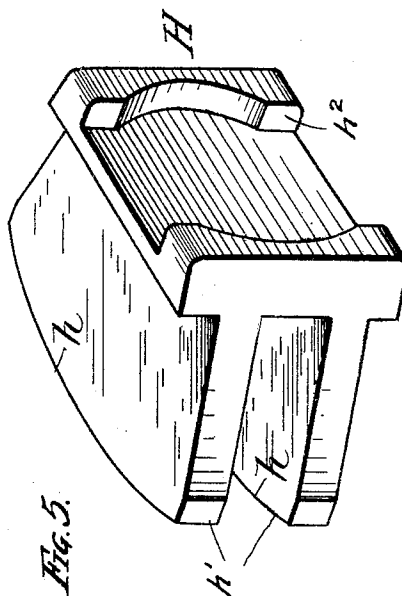
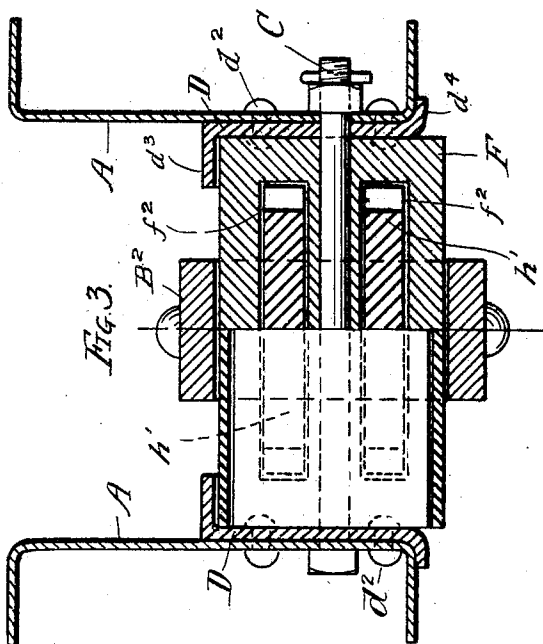
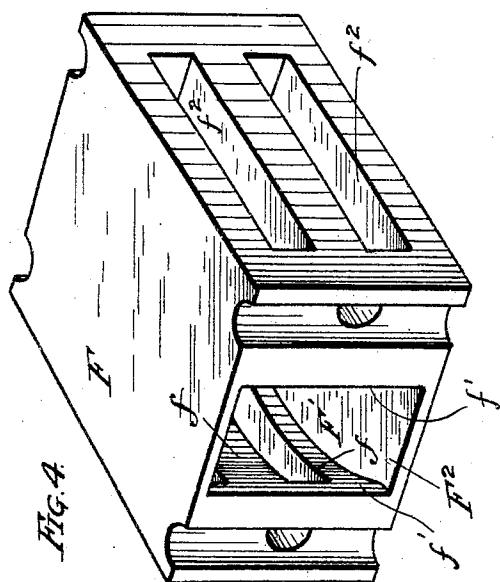


WITNESSES:
J. B. Townsend
J. W. Munday,

INVENTOR.
John F. O'Connor
BY
Munday, Worts & Alcock
his ATTORNEYS

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A. W. Munday

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BY
Munday, East & Alcock
his ATTORNEYS

UNITED STATES PATENT OFFICE.

JOHN F. O'CONNOR, OF CHICAGO, ILLINOIS, ASSIGNOR TO W. H. MINER COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

DRAFT-RIGGING FOR RAILWAY-CARS.

SPECIFICATION forming part of Letters Patent No. 784,697, dated March 14, 1905.

Application filed December 24, 1904. Serial No. 238,237.

To all whom it may concern:

Be it known that I, JOHN F. O'CONNOR, a citizen of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Draft-Rigging for Railway-Cars, of which the following is a specification.

My invention relates to improvements in railway draft-rigging.

The object of my invention is to provide a railway draft-rigging of a strong, simple, efficient, and durable construction and which may be readily and conveniently applied to and removed from the car when required, which will be compact in form and occupy comparatively small space, and which at the same time may be made of any desired tension or cushioning power.

My invention consists in the means I employ to practically accomplish this object or result—that is to say, it consists, in combination with the draw-bar and the draw-bar strap or extension, draft-sills, and side plates or stop castings secured thereto, of a spring cage or box extending between and secured to the side plates or stop-castings and having a spring-containing chamber provided with hollowed or concave front and rear faces or walls and slots or openings to receive sliding thrust-blocks carried by the draw-bar and embraced by its strap or yoke, and a series of straight flat springs fitting in the chamber of the spring box or case and interposed between the curved or convex faces of the front and rear thrust-blocks, so that when the draw-bar moves under pulling or buffing strains in either direction the series of straight flat springs are bent and put under tension, and thus exert a spring resistance, as well as a frictional resistance, due to the slipping movement of the series of spring-plates on each other as they are flexed, the series of flat spring-plates being at all times snugly pressed or held together by the opposing thrust-blocks embracing the same in connection with the spring box or case containing the springs.

My invention also consists in the novel construction of parts and devices and in the novel

combinations of parts and devices herein shown and described.

In the accompanying drawings, forming a part of this specification, Figure 1 is a side elevation, partly in vertical longitudinal section, of a spring draft-rigging embodying my invention. Fig. 2 is a plan view, partly in horizontal section, on line 2 2 of Fig. 1. Fig. 3 is a cross-section on the broken line 3 3 of Fig. 2. Fig. 4 is a detail perspective view of the spring box or case, and Fig. 5 is a detail perspective view of one of the thrust-blocks.

In the drawings, A A represent the draft-sills or framework of the car to which the draft-rigging is applied.

A' is the front or cross sill.

B is the car-coupler, B' the draw-bar, and B² the draw-bar strap, yoke, or extension secured to the draw-bar in the customary manner by bolts or rivets *b* and interengaging shoulders *b'* *b''*.

D D are the side plates or stop-castings having front and rear stops *d* *d'* and secured to the draft sills or frame of the car by bolts or rivets *d''*. Each of the side plates preferably has at its upper edge an integral inwardly-projecting flange *d'''* and at its lower edge an integral outwardly-projecting flange *d''''*.

F is the spring box or case, fitting and extending between the side plates or stop-castings D D and abutting at its front and rear faces against the front and rear stops *d* *d'* of the side plates or stop-castings D. The box or case F is preferably additionally secured in place by cross-bolts C C, which extend through the draft-sills A A, side plates D D, and spring box or case F. The spring box or case F is provided with a chamber F' to receive the series of straight flat spring-plates G and with concave or hollowed front and rear interior faces *f* *f'* to permit flexure of the straight flat springs G, the series or nest of springs bearing at their ends against the bearing faces or shoulders *f''* *f'''* of the spring box or case F.

H and H' are the front and rear thrust-blocks, each having a curved or convex bearing-face *h* to engage the series or nest of

springs G at the front and rear and at or near
 the middle thereof. Each of the thrust-blocks
 H H' is preferably furnished with a plurality
 of wings h' , which fit and slide in correspond-
 5 ing slots or openings f'' in the front and rear
 walls of the spring box or case F. The front
 thrust-block H is provided with flanges or
 shoulders h^2 to fit and receive the rear end of
 the draw-bar against which the front thrust-
 10 block abuts, and the rear thrust-block H' is
 provided with flanges or shoulders h^3 to re-
 ceive and engage the rear end of the strap or
 yoke B², against which the rear thrust-block
 abuts. The front and rear thrust-blocks are
 15 thus embraced by the draw-bar strap or yoke
 and interposed between the draw-bar (and its
 strap or extension) and the series of spring-
 plates G, while the thrust-blocks project and
 slide through the spring box or case. The
 20 spring box or case F has openings F² at its
 sides, through which the series of straight flat
 springs G may be inserted or removed when
 the spring box or case F is lowered from its
 25 position between the side plates or stop-cast-
 ings D.

To remove the draft-rigging from the car,
 it is only necessary to withdraw the bolts C C,
 when the whole draft-rigging may be low-
 30 ered from the car.

In operation buffing strains or blows are
 cushioned by the spring and frictional action
 of the series of straight flat spring-plates G,
 which the front thrust-block H causes to
 spring or bend backward under buffing blows.
 35 In pulling the action is the same, but the
 reverse, the rear thrust-block now causing
 the series of springs G to spring or bend for-
 ward, and when the draw-bar swings or moves
 laterally the convex bearing-faces h of the
 40 thrust-blocks on the draw-bar also flexes the
 springs, thus causing the draw-bar to be re-
 turned to its central position in respect to the
 car. In both pulling and buffing the curved
 or concave front and rear faces f' of the spring
 45 box or cage F limit the extent of flexure of
 the springs and prevent their being bent be-
 yond their elastic limit and the production of
 a permanent set therein and at the same time
 affords a perfectly solid abutment against fur-
 50 ther movement of the draw-bar, thus making
 the draft-rigging very strong and safe, and
 at the same time that the springs are bent
 home against the curved or concave faces f'
 of the box or cage F the thrust-block H or
 55 H' also engages and fits solidly against the
 outer face of the box or cage F, thus giv-
 ing a solid abutment of all parts of the draft-
 rigging against each other. The curved bear-
 ing-faces h of the thrust-blocks H H' are
 60 struck on a smaller radius than that of the
 curved bearing-faces f' of the box or cage F,
 corresponding to the aggregate thickness of
 the series of spring-plates G, so that these two
 65 curves and that of the spring-plates them-
 selves when bent to their limit are all concen-

tric with each other, so that the full elastic
 capacity of each and all the springs is utilized,
 each and all the springs being bent to the de-
 sired extent. As the series of straight flat
 spring-plates G are snugly embraced together
 70 and between the opposing bearings or should-
 ers f' f' of the spring box or case F and as
 the curved or convex bearing-faces of the
 thrust-blocks carried by the draw-bar snugly
 embrace the group of springs interposed be-
 75 tween said thrust-blocks the springs serve
 not only as a spring and frictional cushioning
 device for the draw-bar, but also as a means
 for automatically centering the draw-bar or
 restoring it to its central position in respect to
 80 the car, while permitting the draw-bar to swing
 laterally from side to side, as is necessary
 when the train of cars passes around curves.
 My improved draft-rigging thus serves both
 as a draw-bar-centering device and as a draw-
 85 bar-cushioning device.

My invention permits of a much greater or
 wider movement from side to side of the front
 end of the laterally-movable or swinging draw-
 bar than in constructions heretofore in use, 90
 which is also a material advantage.

I claim—

1. In a draft-rigging, the combination with
 draft-sills and side plates or stop-castings
 secured thereto, of a draw-bar and draw-bar
 95 strap or extension, a spring box or case fitting
 and extending between the side plates or stop-
 castings and abutting against the front and
 rear stops thereon and provided with a cham-
 ber to receive a series of straight, flat spring-
 100 plates, and with shoulders or bearings for the
 opposite ends of said series of spring-plates,
 a series of straight, flat spring-plates in said
 box or case, and front and rear thrust-blocks
 having convex bearing-faces to engage the se-
 105 ries of spring-plates at their middle and inter-
 posed between said springs and the draw-bar
 and its extension, substantially as specified.

2. In a draft-rigging, the combination with
 a draw-bar and draw-bar strap or extension,
 110 of a pair of thrust-blocks embraced and car-
 ried thereby, a series of flat, straight spring-
 plates interposed between said thrust-blocks,
 and a spring box or case containing said
 springs and having bearings for the ends 115
 thereof, substantially as specified.

3. In a draft-rigging, the combination with
 a draw-bar and draw-bar strap or extension,
 of a pair of thrust-blocks embraced and car-
 ried thereby, a series of flat, straight spring-
 120 plates interposed between said thrust-blocks,
 a spring box or case containing said springs
 and having bearings for the ends thereof, and
 side plates or stop-castings having front and
 rear stops engaging said spring box or case,
 125 substantially as specified.

4. In a draft-rigging, the combination with
 a draw-bar and draw-bar strap or extension,
 of a pair of thrust-blocks embraced and car-
 ried thereby, a series of flat, straight spring-
 130

plates interposed between said thrust-blocks, a spring box or case containing said springs and having bearings for the ends thereof, and said spring box or case having hollowed or concave front and rear inner faces, substantially as specified.

5. In a draft-rigging, the combination with a draw-bar and draw-bar strap or extension, of a pair of thrust-blocks embraced and carried thereby, a series of flat, straight spring-plates interposed between said thrust-blocks, a spring box or case containing said springs and having bearings for the ends thereof, said spring box or case having hollowed or concave front and rear inner faces, and said thrust-block having convex bearing-faces to engage said springs at their middle, substantially as specified.

6. In a draft-rigging, the combination with a draw-bar and draw-bar strap or extension, of a pair of thrust-blocks embraced and carried thereby, a series of flat, straight spring-plates interposed between said thrust-blocks, a spring box or case containing said springs and having bearings for the ends thereof, said spring box or case having openings at the sides thereof through which the springs may be inserted and removed, substantially as specified.

7. In a draft-rigging, the combination with a draw-bar and draw-bar strap or extension, of a pair of thrust-blocks embraced and carried thereby, a series of flat, straight spring-plates interposed between said thrust-blocks, a spring box or case containing said springs and having bearings for the ends thereof, said spring box or case having slots or openings through its front and rear walls through which the thrust-blocks project and slide, substantially as specified.

8. In a draft-rigging, the combination with a draw-bar and draw-bar strap or extension, of a pair of thrust-blocks embraced and carried thereby, a series of flat, straight spring-plates interposed between said thrust-blocks, and a spring box or case containing said springs and having bearings for the ends thereof, said spring box or case having slots or openings through its front and rear walls, and said thrust-blocks having wings projecting through said slots or openings in the front and rear walls of said box or case, substantially as specified.

9. In a draft-rigging, the combination with a draw-bar and draw-bar strap or extension, of a pair of thrust-blocks embraced and carried thereby, a series of flat, straight spring-plates interposed between said thrust-blocks, a spring box or case containing said springs and having a bearing for the ends thereof, side plates or stop-castings having front and rear stops engaging said spring box or case, and bolts extending transversely through said side plates or stop-castings and said spring box or case to removably secure the same in position, substantially as specified.

10. In a draft-rigging, the combination with a draw-bar B' and draw-bar strap B^2 , of side plates $D D$, having front and rear stops $d d'$, spring box or case F having spring-chamber F' and spring bearings or shoulders f' , a series of straight, flat springs G in said box or case, and thrust-blocks $H H'$ carried by said draw-bar and its extension, and engaging said springs, substantially as specified.

11. In a draft-rigging, the combination with a draw-bar and draw-bar strap or extension, provided with curved or convex bearings adapted to engage a series of straight, flat spring-plates at their middle, of a series of straight, flat, spring-plates interposed between said bearings, and a spring box or case containing said springs and having bearings for the ends thereof, substantially as specified.

12. In a draft-rigging, the combination with a draw-bar and draw-bar strap or extension, provided with curved or convex bearings adapted to engage a series of straight, flat spring-plates at their middle, of a series of straight, flat spring-plates interposed between said bearings, a spring box or case containing said springs and having bearings for the ends thereof, and side plates or stop castings furnished with stops or shoulders engaging said spring box or case, substantially as specified.

13. In a draft-rigging, the combination with a draw-bar and draw-bar strap or extension, of a series of flat, straight spring-plates extending transversely between the upper and lower members of the draw-bar strap or extension, and a spring box or case furnished with bearings for the ends of the springs, substantially as specified.

14. In a draft-rigging, the combination with a draw-bar and draw-bar strap or extension, of a series of straight, flat spring-plates extending through the draw-bar strap or extension and embraced thereby, means connected with the draw-bar for engaging said springs at their middle, side plates or stop-castings, and bearings for the ends of the springs, substantially as specified.

15. The combination with a laterally-movable or swinging draw-bar, of a series of straight, flat spring-plates extending transversely of the draw-bar, stationary front and rear bearings for the ends of the springs, and curved or convex front and rear bearings movable with the draw-bar and embracing said springs at their middle portion, whereby the springs serve both as a cushioning device for the draw-bar and also as a centering device therefor while permitting the draw-bar to swing laterally as required, substantially as specified.

16. The combination with a draw-bar, of a series of transversely-extending flat spring-plates, means for anchoring said spring-plates at their ends to the car-frame, and curved bearings connected with the draw-bar between

which said springs are snugly embraced so that the springs will serve both to cushion the draw-bar and to restore it to position centrally of the car after it has been swung laterally, substantially as specified.

17. The combination with a laterally-movable or swinging draw-bar, of a series of flat, straight spring-plates extending transversely of the draw-bar, means for anchoring said spring-plates at their ends to the car-frame, and curved bearings connected to and movable with the draw-bar and snugly embracing said springs, whereby lateral or swinging movement of the draw-bar causes flexure of the springs, substantially as specified.

18. The combination with a draw-bar, of a series of transversely-extending spring-plates, and opposing convexly and concavely curved bearing-faces connected respectively with the draw-bar and the stationary frame of the car

and engaging said springs to limit their extent of flexure and prevent their being given a permanent set and affording solid supports for the springs, substantially as specified.

19. The combination with a car-frame or sills furnished with opposing bearings for transversely-extending flat spring-plates, and with concave faces to limit the extent of flexure of the springs, of a set of transversely-extending flat spring-plates, a draw-bar and draw-bar strap or extension furnished with convex bearing-faces engaging the springs, the convex bearing-faces carried by the draw-bar being concentric with said corresponding opposing concave bearing-faces, substantially as specified.

JOHN F. O'CONNOR.

Witnesses:

H. M. MUNDAY,
EDMUND ADCOCK.