

No. 784,697.

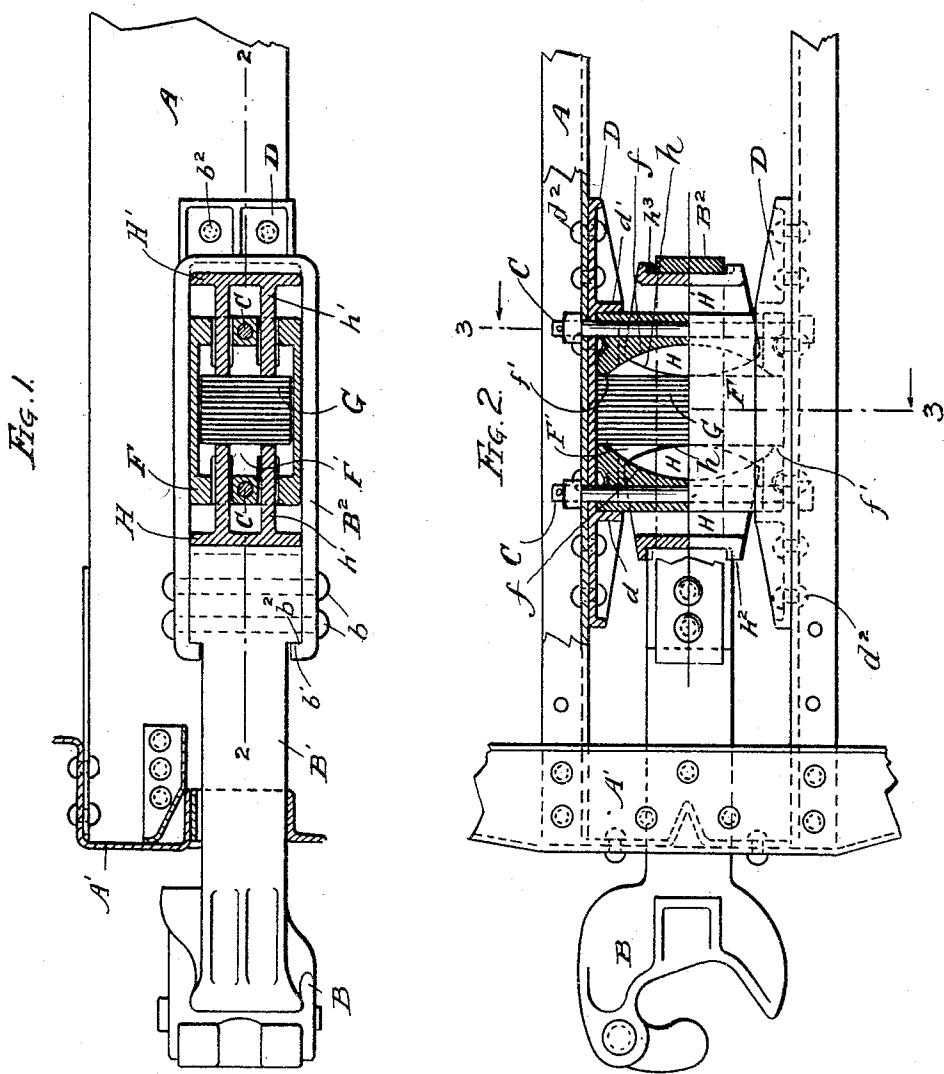
PATENTED MAR. 14, 1905.

J. F. O'CONNOR.

## DRAFT RIGGING FOR RAILWAY CARS.

APPLICATION FILED DEC. 24, 1904.

2 SHEETS—SHEET 1.



*WITNESSES:*

J. B. Townsend  
J. W. Hinckley,

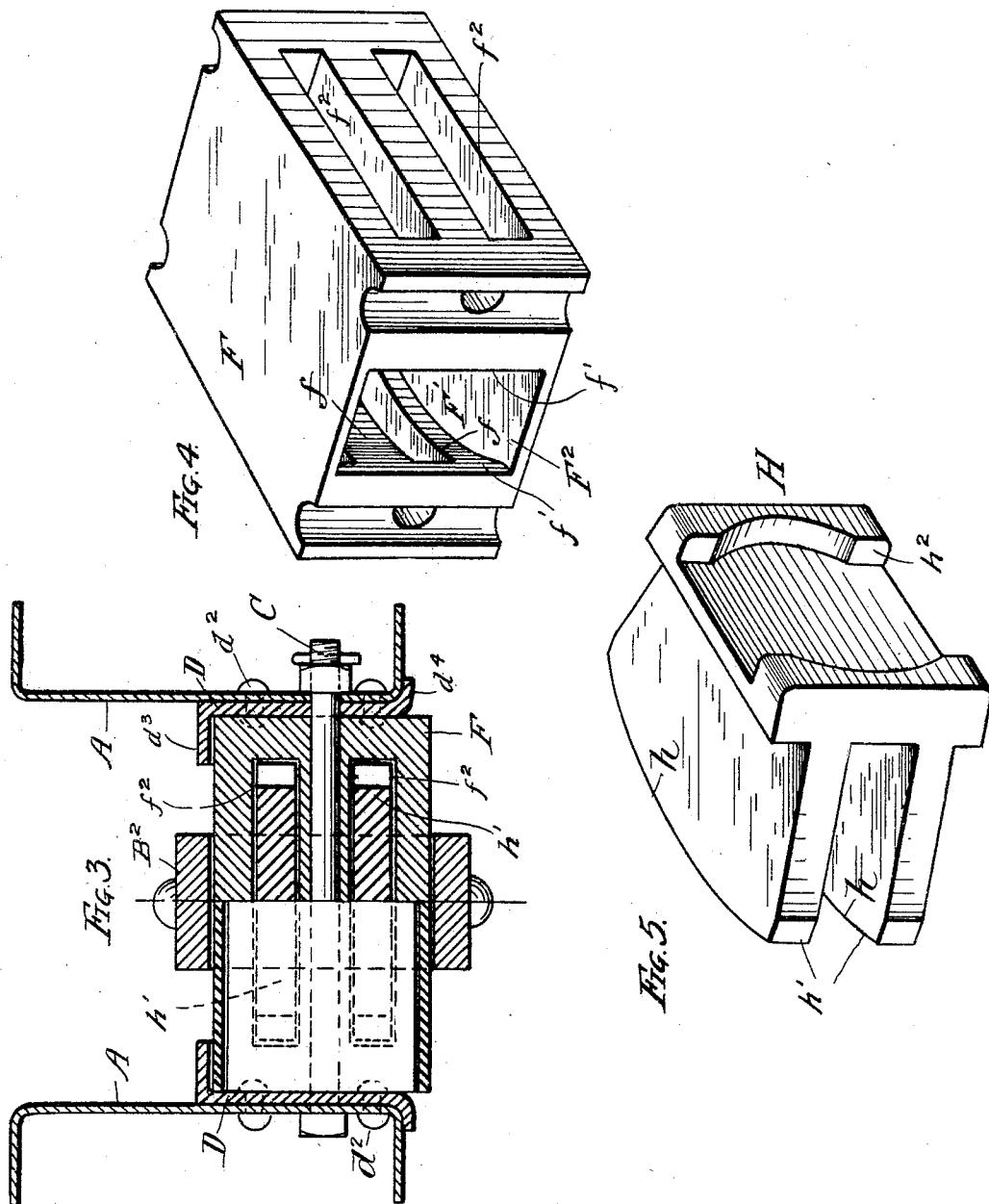
INVENTOR.  
John F. O'Connor  
BY  
Munday, Warts & Adcock  
his ATTORNEYS

No. 784,697.

PATENTED MAR. 14, 1905.

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

2 SHEETS—SHEET 2.



WITNESSES:

J. B. Townsend  
A. M. Sunday

INVENTOR.  
John F. O'Connor  
BY  
Munday, Davis & Adcock  
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 5 in Draft-Rigging for Railway-Cars, of which the following is a specification.

My invention relates to improvements in railway draft-rigging.

10 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 15 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.

15 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 20 between and secured to the side plates or stop-castings and having a spring-containing chamber provided with hollowed or concaved front and rear faces or walls and slots or openings to receive sliding thrust-blocks carried 25 by the draw-bar and embraced by its strap or yoke, and a series of straight flat springs fitting 30 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 35 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 40 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 45 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.

50 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 55 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. 60

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 65 B<sup>2</sup> 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<sup>2</sup>.

D D are the side plates or stop-castings having 70 front and rear stops d d' and secured to the draft sills or frame of the car by bolts or rivets d<sup>2</sup>. Each of the side plates preferably has at its upper edge an integral inwardly-projecting flange d<sup>3</sup> and at its lower edge an 75 integral outwardly-projecting flange d<sup>4</sup>.

F is the spring box or case, fitting and extending 80 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 85 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 90 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 95 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

5 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 corresponding slots or openings f<sup>2</sup> 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<sup>2</sup> to fit and receive the rear end of the draw-bar against which the front thrust-block abuts, and the rear thrust-block H' is provided with flanges or shoulders h<sup>3</sup> to receive and engage the rear end of the strap or yoke B<sup>2</sup>, against which the rear thrust-block abuts. The front and rear thrust-blocks are 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 F<sup>2</sup> 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 position between the side plates or stop-castings 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 lowered from the car.

30 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 forward, and when the draw-bar swings or moves laterally the convex bearing-faces h of the thrust-blocks on the draw-bar also flexes the springs, thus causing the draw-bar to be returned 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 40 box or cage F limit the extent of flexure of the springs and prevent their being bent beyond their elastic limit and the production of a permanent set therein and at the same time affords a perfectly solid abutment against further 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 45 H' also engages and fits solidly against the outer face of the box or cage F, thus giving a solid abutment of all parts of the draft-rigging against each other. The curved bearing-faces h of the thrust-blocks H H' are 50 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 curves and that of the spring-plates themselves 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 desired extent. As the series of straight flat spring-plates G are snugly embraced together 70 and between the opposing bearings or shoulders f' f' of the spring box or case F and as the curved or convexed bearing-faces of the thrust-blocks carried by the draw-bar snugly embrace the group of springs interposed between 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 chamber to receive a series of straight, flat spring-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 100 having convex bearing-faces to engage the series of spring-plates at their middle and interposed 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 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, 115 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 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, and side plates or stop-castings having front and rear stops engaging said spring box or case, 120 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 carried 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 5 concaved 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 10 spring box or case having hollowed or concaved 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 25 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 35 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.

40 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 45 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 50 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 55 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, 60 substantially as specified.

10. In a draft-rigging, the combination with a draw-bar B' and draw-bar strap B<sup>2</sup>, 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. 70

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 80 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, 85 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 90 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. 95

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. 100

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. 105

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 110 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. 115

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 120 125 130

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, 5 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 10 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 15 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 20 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 25 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 30 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 35 as specified.

JOHN F. O'CONNOR.

Witnesses:

H. M. MUNDAY,  
EDMUND ADCOCK.