No. 751,983. PATENTED FEB. 9, 1904.

J. A. HINSON.

DRAFT RIGGING FOR RAILWAY CARS.

APPLICATION FILED APR. 13, 1903.

NO MODEL. 3 SHEETS—SHEET 1.

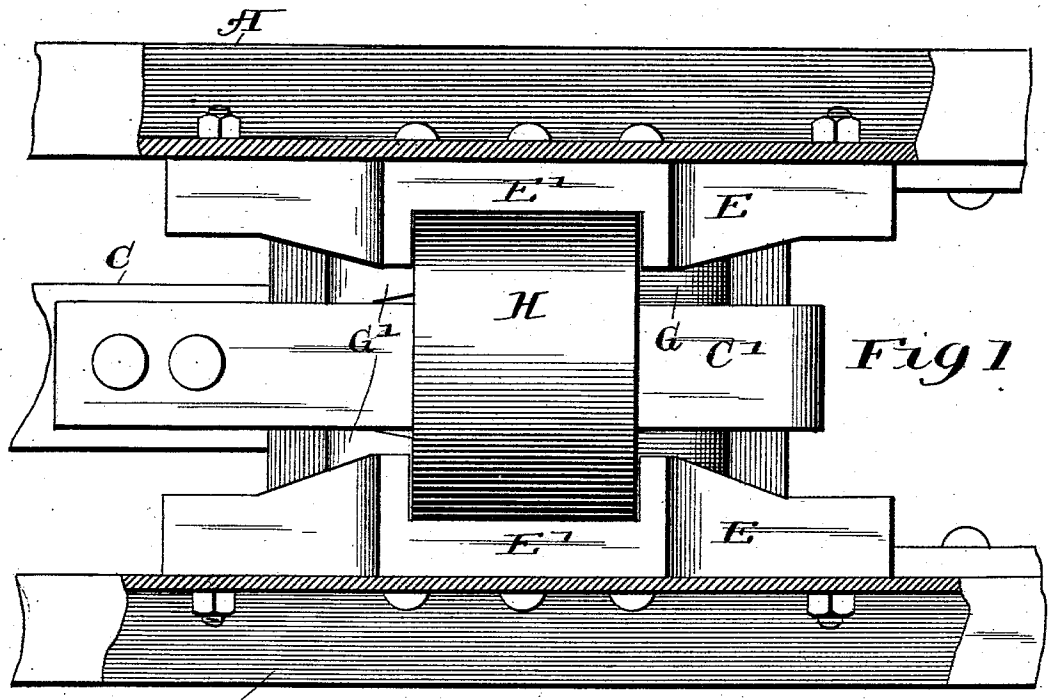

Fig 1.

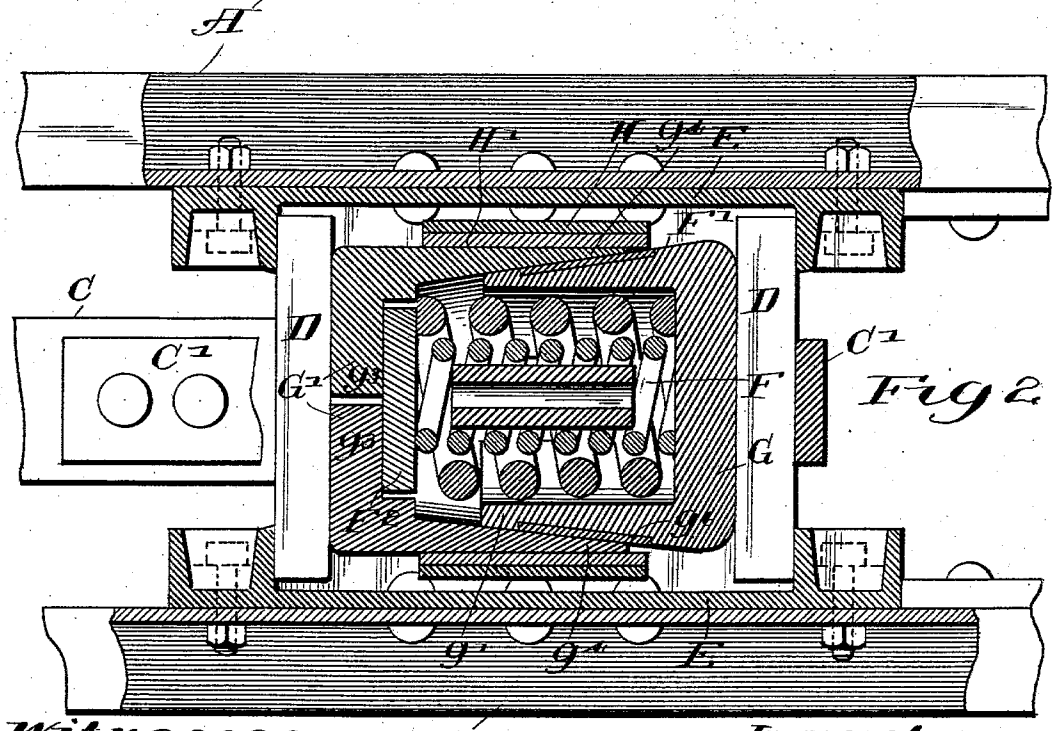

Fig 2.

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Poole & Brown
his Attorneys

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NO MODEL. 3 SHEETS—SHEET 2.

Fig 3

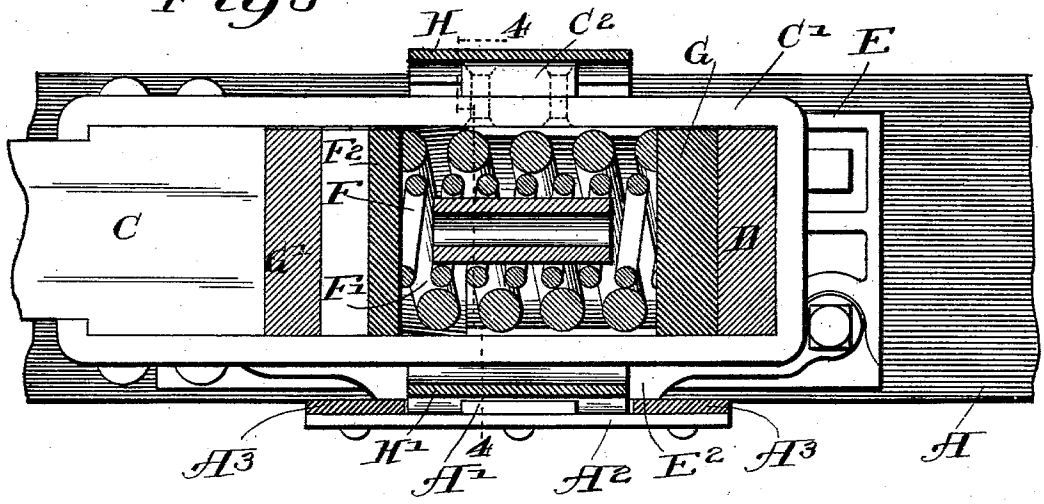


Fig 4

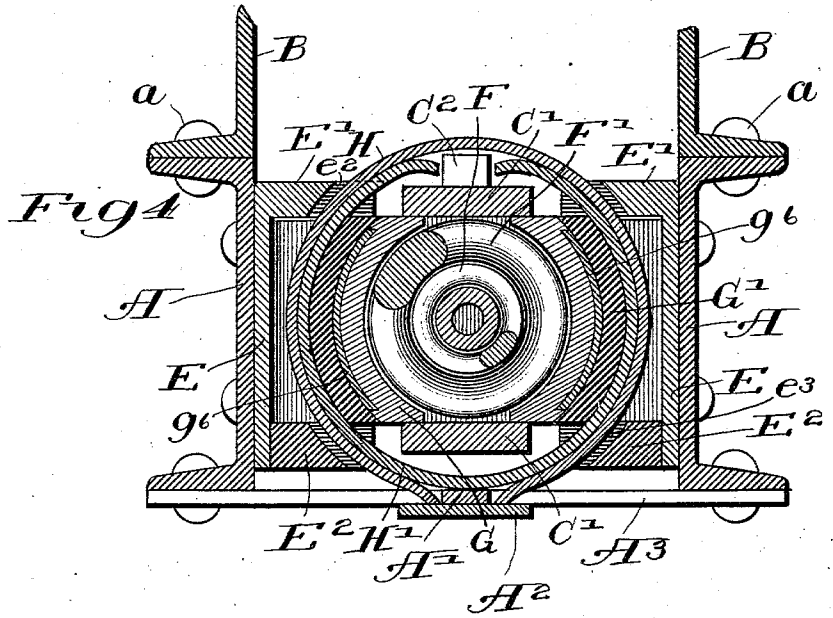
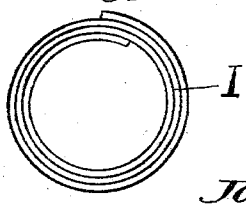


Fig 10



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NO MODEL. 3 SHEETS—SHEET 3.

Fig 5

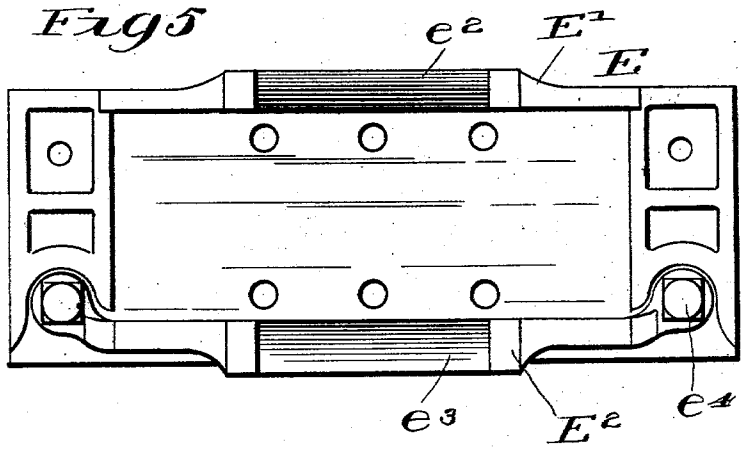


Fig 6

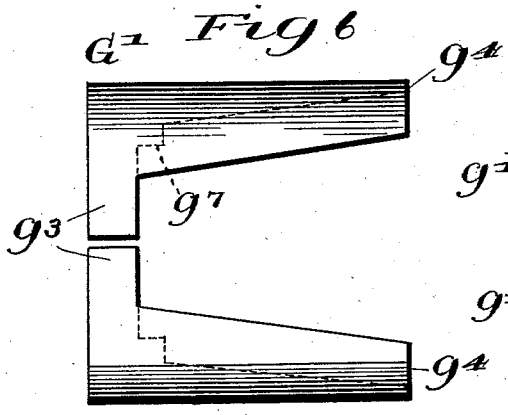


Fig 7

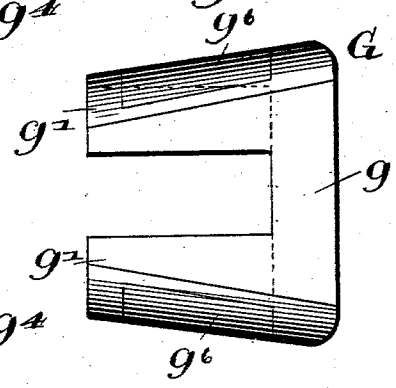


Fig 8

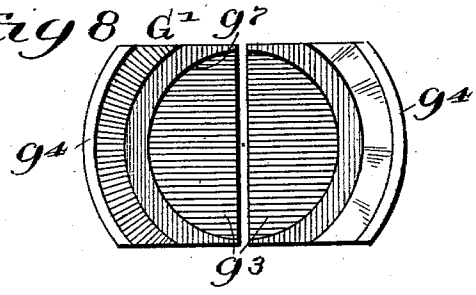
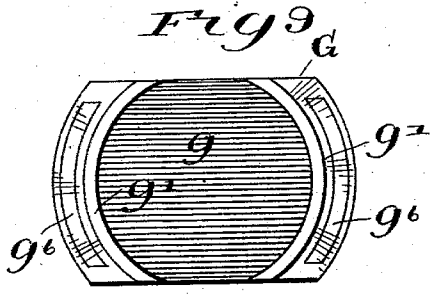


Fig 9



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No. 751,983. Patented February 9, 1904.

UNITED STATES PATENT OFFICE.

JAMES A. HINSON, OF CHICAGO, ILLINOIS.

DRAFT-RIGGING FOR RAILWAY-CARS.

SPECIFICATION forming part of Letters Patent No. 751,983, dated February 9, 1904.

Application filed April 13, 1903. Serial No. 152,354. (No model.)

To all whom it may concern:

Be it known that I, JAMES A. HINSON, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Draft-Rigging for Railway-Cars; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in draw-bar draft-rigging for car-couplers, and refers more specifically to devices located between the draw-bar and the draft-sills for taking up or absorbing shocks transmitted to the draw-bar in the tractive use of the car and during the operations of coupling and also for lessening the recoil of the parts under the action of the spring or springs placed under tension.

In the drawings, Figure 1 is a plan view of the operative elements of a draft-rigging embodying my invention, showing the draft-sills in section. Fig. 2 is a plan section thereof. Fig. 3 is a central vertical section of said parts. Fig. 4 is a transverse vertical section taken on line 4 4 of Fig. 3. Fig. 5 is an inner face view of one of the draft-plates. Figs. 6 and 7 are side elevations of the spreading wedge members of the auxiliary spring device. Figs. 8 and 9 are inner end views of the wedge members shown in Figs. 6 and 7, respectively. Fig. 10 illustrates a modified form of the friction-spring.

As shown in said drawings, A A designate the draft-sills, which are attached to the under sides of the longitudinal floor-frame sill B of the car by bolts *a*. Said floor-sills and draft-sills are shown as made of flanged metal beams, but may be made of wood.

C designates the draw-bar of the coupler, and C′ the yoke thereof.

D D designate follower-plates which extend transversely through the draw-bar yoke and engage at their end inwardly-opening pockets formed in the draft-plates E E, which are attached to the inner faces of the draft-sills.

F F′ designate inner and outer coiled expansively-acting springs which are contained in the draw-bar yoke and act against the follower-bars D D through intermediate agencies hereinafter to be described, whereby said springs act to resist in the usual manner the draft and buffing thrusts of the draw-bar and to restore the parts of the draft-rigging.

In addition to the springs F F′ for resisting the draft and buffing thrusts of the draw-bar I have provided an auxiliary spring device embracing in general terms two coacting wedge members which are forced or closed together by the draft and buffing thrusts of the draw-bar and a spring or springs applied to the coacting parts of said wedge members and adapted to resist the closing movements of said wedge members. The auxiliary spring or springs are so arranged that the parts or members thereof bear upon each other in a manner to produce friction between said parts during the draft and buffing strains thereof, thereby supplementing the friction between the contacting faces of the wedge members to resist the closing movement of said wedge members.

The essential or executive elements of the supplemental spring and friction devices above mentioned may be embodied in a variety of structural forms varying in their details, and I have herein shown one form which is a practical and for some reasons a preferred form of said device.

As shown in said drawings, G G′ designate the wedge members referred to, which are made hollow and the latter located within the former, and H H′ designate circular leaf-springs which surround the outer wedge member. One of said wedge members is provided with exterior conical-shaped bearing-surfaces, while the other is provided with corresponding interior bearing-surfaces and consists of two laterally-separable parts, whereby when the exteriorly-wedge-shaped member is forced thereinto said parts spread or expand against the resistance of said springs H H′. The inner wedge member consists of a flat base or web *g*, Fig. 7, having oppositely-disposed inwardly-extending wedges *g′ g′*, which are provided with exterior conical friction-faces. The wedge member G′ consists of two similar parts, each consisting of a half base portion g^3 and

a wedge g^4, being arranged outside of the wedges g' of the wedge member G and provided with interior conical friction-faces, against which bear the exterior conical faces of said wedge member G. The wedge member G′ is made of separable parts to permit the parts thereof to spread laterally outwardly when the inner wedge member G is forced thereinto. Preferably, one of said wedge members—the member G, as herein shown—is provided on its contact-faces with a wearing-plate g^6, which is made of a harder metal than that of the wedge member G′. Said wedge members are set between the follower-bars D D and within the draw-bar yoke C′. The bases of said wedge members are set flat against the follower-bars D, so that movement of said follower-bars is communicated directly to said wedge members. The separable wedge member G′ may, if desired, be made of more than two parts to be spread radially in more than two directions. The bases of the wedge members are shown as flattened at their upper and lower sides to fit between the members of the draw-bar yoke, and the wedges of the inner wedge member, as the rigging shown is organized, are made of a width to fit closely between the members of said yoke. The springs F F′ are contained between the wedges of said wedge members, the latter constituting an inclosure for said springs. Said springs bear at one end thereof against the base or web g of the inner wedge member G and at their other ends against a plate F^2, which is fitted in a recess g^7 in the inner faces of the base members of the wedge member G′, said plate being interposed between the springs and the wedge member by reason of the fact that it is undesirable that the springs shall bear directly against the laterally-movable base members.

The exterior contour of the wedges g^4 of the wedge member G′ is cylindric and against which bears the inner spring H′. Said springs H H′ are each herein shown made of a single leaf, which almost, but not entirely, surrounds the outer wedge member G′. A preferred arrangement of said springs is to locate the space between the ends of one spring opposite to the space between the end of the other spring, the spaces between the springs being herein shown as located one at the top and the other at the bottom of the device. Said springs extend above and below and surround the upper and lower members of the draw-bar yoke C′, as shown in Fig. 5. The inner spring H′ is separated at its ends above the upper member of the draw-bar yoke, and the spring is held from rotation by means of a stop-block C^2, which is attached to the upper face of the upper member of the draw-bar yoke. The outer spring H, which is located at its upper part outside of or above said block C^2, is held from rotation by means of a stop-block A′ between the ends thereof, which is attached to a horizontal longitudinally-extending bar A^2, which latter is attached at its ends centrally to two transverse straps A^3 A^3, extending between and attached at their ends to the lower margins of the draft-sills. More than two of the surrounding springs, such as H and H′, may be employed, if desired.

The draft-plates E are provided at their margins with upper and lower inwardly-extending flanges E′ E^2, which are provided, respectively, with centrally-located notches e^2 e^3, within which said springs H H′ fit at their sides. Said notched flanges constitute means to prevent the springs from moving rearwardly during the buffing thrust of the draw-bar, as obviously if said springs were unconfined they would move rearwardly with the wedge member G′ at the time the latter is moved during the buffing thrust of the draw-bar. The springs being thus held longitudinally immovable, the outer wedge member moves relatively to the inner spring H and in frictional contact therewith during such buffing thrust of the draw-bar and during the restoring movement thereof. The lower flanges E^2 of said draft-plates are made removable in order to facilitate the insertion and removal of the follower-bars.

In the operation of the draft-rigging it will be observed that the end thrust of the draw-bar in either direction acts to force or close one of the wedge members against the other, one of said wedge members being held stationary during such thrust and the other being moved toward the stationary wedge member. The effect of the closing of said wedge members together in this manner is to separate or move outwardly the two parts of the wedge member G′ against the action of the surrounding springs H H′, said springs resisting the closing of said wedge members together. The end thrust of the draw-bar is resisted not only by the action of the springs H H′, but also by the action of the coiled springs F F′ in the usual manner. The resisting capacity of the surrounding springs H H′ against the closing movement of the wedge members extends beyond the resiliency of the springs, as said springs press together the conical friction-surfaces of the wedge members and combine the frictional resistance thus developed with said spring resistance. Moreover, in the form of springs H H′ herein shown and other forms of springs which may be employed the parts or members of the springs bear and move upon each other during the draft and buffing strains or during the time the springs are being expanded or opened outwardly, and the friction developed between the moving parts or members thereof resists the opening movement of the springs, and therefore supplements the spring resistance of said springs and the frictional resistance between the wedge members. By reason of the interposition of the plate F^2 between the coiled springs F F′ and the sep-

arable or two-part base of the outer wedge member the laterally-outward movement of the parts of the wedge members is retarded or resisted by the friction between said base members and the plate F^2 on the one side and the adjacent follower-bar on the other side, which aids to resist the end thrust of the draw-bar. It will be observed, furthermore, that during the inward thrust of the draw-bar, such as occurs during the coupling of two cars, the separable wedge G′ moves relatively to the springs H H′, so that there is developed between the inner spring H and the outer cylindric surface of the separable wedge member an additional friction, which acts to resist the end thrust of the draw-bar. When the stress of the end thrust of the draw-bar is released, the force of the compressed springs F F′ move outwardly or separate the wedge members and the force of the surrounding springs H H′ acts to close together the parts of the outer wedge member G′ when the inner wedge member is withdrawn therefrom, thereby restoring the parts of the device to their original positions.

In lieu of the springs H H′ shown and described I may employ a single spiral spring I, such as is shown in Fig. 10, which is adapted to be wound about the outer separable wedge member G′ and acts in a manner similar to the springs H H′ to resist the opening movement of said outer wedge member. In this form of spring the several turns of the spring bear upon each other with frictional contact, as do the inner and outer springs H H′, before described.

It will thus be seen that my construction provides a draft-rigging of enormous capacity to resist draft and buffing strains and that the parts are capable of exceedingly compact arrangement.

I claim as my invention—

1. In a draft-rigging, the combination with the draw-bar, of wedge members which are closed together by the draft and buffing thrusts of the draw-bar and a spring or springs inclosing and pressing together the coacting parts of said wedge members and resisting the closing movement of the wedge members.

2. In a draft-rigging, the combination with the draw-bar, of friction wedge elements which are closed together by the draft and buffing thrusts of the draw-bar and a single spring which acts inwardly and oppositely against said wedge elements for pressing together said wedge elements and resisting their closing movement, said spring acting frictionally to resist the draft and buffing strains of the spring and the closing movements of the wedge elements.

3. In a draft-rigging, the combination with the draw-bar, of friction-wedges which are closed together by the draft and buffing thrusts of the draw-bar, and a spring or springs for pressing said wedges together and resisting their closing movement, said spring or springs embracing parts which are frictionally engaged and relatively movable during the draft and buffing strains brought thereon.

4. In a draft-rigging, the combination with a draw-bar, of wedge members which are closed together by the draft and buffing thrusts of the draw-bar and a spring or springs inclosing and pressing together the coacting parts of said wedge members and resisting their closing movement, the members of said spring or springs having frictional contact in such manner that the friction between said members resists the draft and buffing strains of the spring or springs.

5. In a draft-rigging, the combination with a draw-bar, of wedge members having coacting friction-surfaces and one of which is hollow to receive the other, the outer wedge member being separable so as to be spread or expanded by the inner member and a spring or springs surrounding the outer member and resisting the expansion of said separable member, said spring or springs having members which overlap one on the other in frictional engagement, whereby the friction between said members resists the draft and buffing strains of the spring or springs.

6. In a draft-rigging, the combination with the draw-bar, of friction wedge elements which are closed together by the draft and buffing thrusts of the draw-bar, spring elements for pressing together the wedge elements and resisting their closing movement, said spring elements embracing friction elements which resist the draft and buffing strains of the spring elements and means for separating said wedge elements when the draft and buffing stress is released.

7. In a draft-rigging, the combination with a draw-bar, of hollow wedge elements contained one within the other and having friction contact-faces, the outer wedge member being made separable to be spread by the inner wedge member, a spring or springs surrounding the outer member to resist the expansion thereof and a coiled spring acting against said wedge members in a manner to force the same apart.

8. In a draft-rigging, the combination with a draw-bar, of hollow friction-wedges, one contained within the other and provided with friction contact-faces, the outer wedge member being made separable so as to be expanded by the inner member, a spring or springs surrounding the outer member and comprising parts or members which frictionally move one on the other during the draft and buffing strains and a coiled spring acting against said wedge members in a manner to force the same apart.

9. In a draft-rigging, the combination with a draw-bar and its yoke, draft-plates attached to the draft-sills and follower-bars extending through said yoke and engaging pockets in

said draft-plates, of hollow friction-wedges contained one within the other and provided with friction contact-faces and bearing at their ends against said follower-bars, the outer friction member being made separable so as to be expanded by the inner member, a spring or springs surrounding the outer wedge member and resisting the expansion of said outer wedge member, and a spring acting against said wedge members to force the same apart.

10. In a draft-rigging, the combination with a draw-bar and its yoke, draft-plates attached to the draft-sills and follower-bars extending through said yoke and engaging pockets in said draft-plates, of hollow friction-wedges contained one within the other and provided with friction contact-faces and bearing at their ends against said follower-bars, the outer friction member being made separable so as to be expanded by the inner member, a spring or springs surrounding the outer wedge member and resisting the expansion of said outer wedge member, said spring or springs comprising members which have frictional engagement whereby the friction between said parts resists the draft and buffing strains of said spring or springs, and a spring acting against said members to force the same apart.

11. In a draft-rigging, the combination with the draw-bar and its yoke, draft-plates attached to the draft-sills and follower-bars extending through the yoke and engaging pockets in said draft-sills, of hollow friction-wedges one contained within the other and provided with friction contact-faces, and bearing at their ends against said follower-bars, the outer wedge member being made separable so as to be expanded by the inner wedge member, a spring or springs surrounding the outer wedge member and resisting the expansion thereof, a coiled spring acting against said wedge members to force the same apart and a plate interposed between one end of said spring and the end of the separable wedge member.

12. In a draft-rigging, the combination with the draw-bar, of wedge members which are closed together by the draft and buffing thrusts of the draw-bar and two curved leaf-springs surrounding the coacting parts of said wedge members, one spring surrounding the other, the ends of said springs being separated, and the space between the ends of one spring being located on the side of the wedge members remote from the space between the ends of the other spring.

13. In a draft-rigging, the combination with the draw-bar and its yoke, draft-plates attached to the draft-sills and follower-bars extending through said yoke and engaging pockets in said draft-plate, of hollow wedge members contained one within the other and provided with friction contact-faces, the outer wedge member being made separable so as to be expanded by the inner wedge member, two curved leaf-springs surrounding the outer wedge member, one spring surrounding the other, the ends of said springs being separated, and the space between the ends of one of said springs being located opposite to the space between the ends of the other spring and a spring interposed between said wedge members and acting to force the same apart.

14. In a draft-rigging, the combination with the draw-bar and its yoke, draft-plates attached to the draft-sills and follower-bars extending through said yoke and engaging pockets in said draft-plates, of hollow wedge members contained one within the other being made separable so as to be expanded by the inner wedge member, two curved leaf-springs surrounding the outer wedge member, the ends of said springs being separated and the space between the ends of one of said springs being located opposite to the space between the ends of the other spring, a coiled spring interposed between said wedge members and acting to force the same apart, and stops located in the spaces between the ends of said springs for preventing rotation of the springs.

15. In a draft-rigging, the combination with the draw-bar and its yoke, draft-plates attached to the draft-sills, and follower-bars extending through the draw-bar and engaging pockets in said draft-plates, of hollow wedge members one contained within the other and provided with friction contact-faces, the outer wedge member being made separable so as to be expanded by the inner wedge member, a spring or springs surrounding the outer wedge member and acting to resist the expansion thereof and flanges on the draft-plates provided with notches adapted to receive the said surrounding springs at the sides of the draft-rigging.

In testimony that I claim the foregoing as my invention I affix my signature, in presence of two witnesses, this 11th day of April, A. D. 1903.

JAMES A. HINSON.

Witnesses:
WILLIAM L. HALL,
B. C. WHITE.