No. 849,562. PATENTED APR. 9, 1907.

J. F. O'CONNOR.

FRICTION DRAFT RIGGING FOR RAILWAY CARS.

APPLICATION FILED DEC. 20, 1906.

2 SHEETS—SHEET 1.

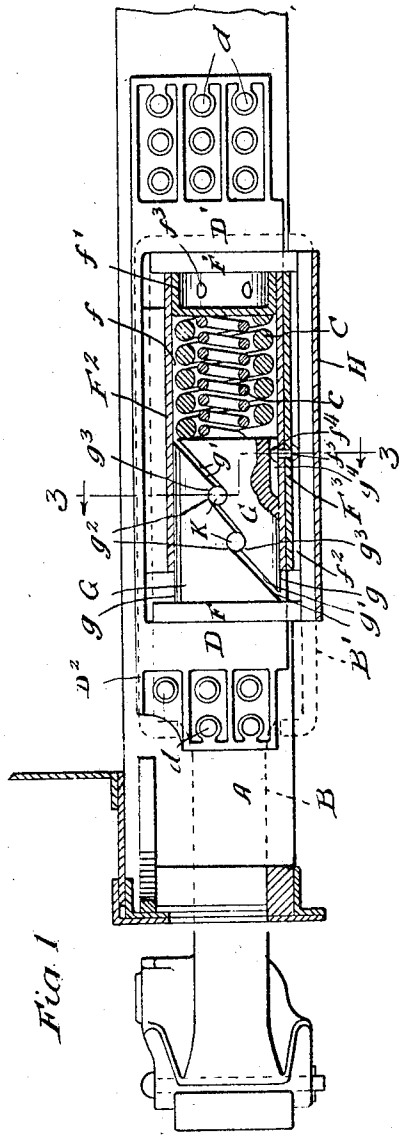


Fig. 1

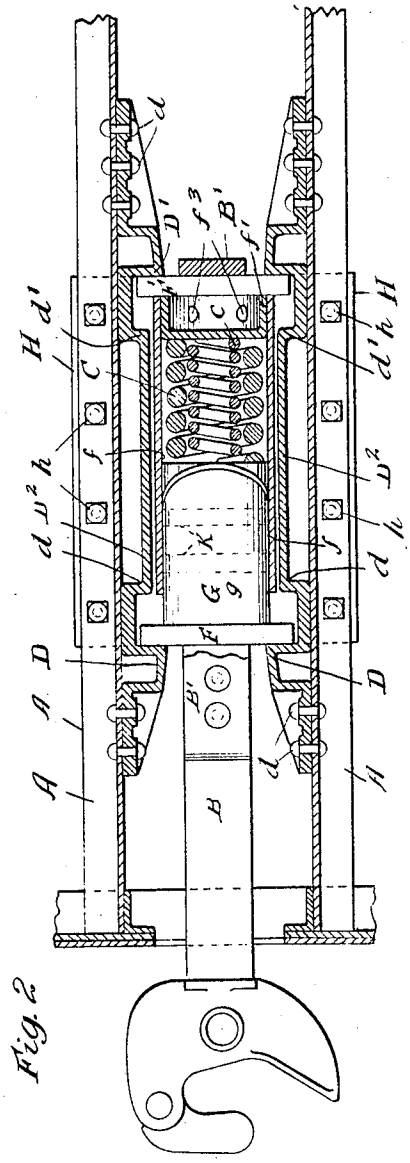


Fig. 2

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Fig. 3

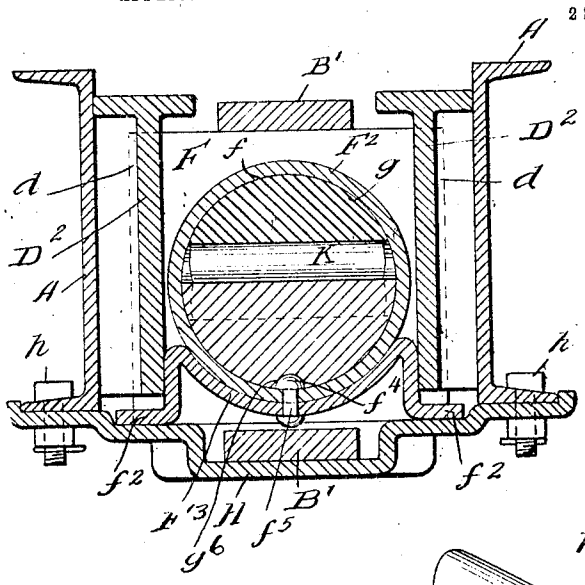


Fig. 4

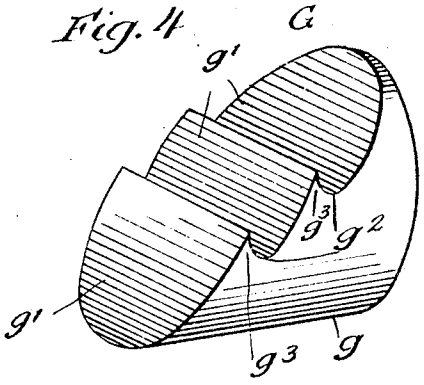
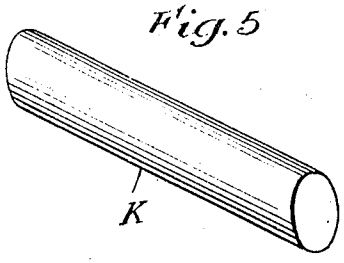


Fig. 5



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UNITED STATES PATENT OFFICE.

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FRICTION DRAFT-RIGGING FOR RAILWAY-CARS.

No. 849,562. Specification of Letters Patent. Patented April 9, 1907.

Application filed December 20, 1906. Serial No. 348,675.

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 Friction Draft-Rigging for Railway-Cars, of which the following is a specification.

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

In friction draft-rigging heretofore in use difficulty is experienced in the practical operation, owing to the tendency of the wedging, spreading, or load-distributing mechanism to stick and be irregular and uncertain in action and sudden and violent in movement when motion once begins, thus greatly reducing the effective frictional cushioning power or absorption of work by the friction-surfaces.

The object of my invention is to provide an efficient means for overcoming this difficulty or objection and of enabling the friction devices to uniformly and reliably exert a positive predetermined frictional resistance or cushioning effect without interfering with the strength, durability, and safety of the draft-rigging as a whole or materially increasing the number of parts or complicating the construction.

My invention consists in the means I employ to practically accomplish this object or result—that is to say, it consists, in connection with the draw-bar, draft-rigging spring, followers, and stops, of a longitudinally-movable friction device or shell, of coöperating friction-blocks having their inclined wedging or spreader meeting faces provided with steps or offsets, and a plurality of anti-friction-rollers interposed between the spreader-faces of the friction-blocks and held in position by the shoulders connecting the adjacent steps or offset portions of the spreader-faces.

My invention further consists in the novel construction of parts and devices and in the novel combinations of parts and devices herein shown and described, and more specifically pointed out in the claims.

In the accompanying drawings, forming a part of this specification, Figure 1 is a side elevation, partly in vertical longitudinal section, of a friction draft-rigging embodying my invention. Fig. 2 is a plan view, partly in horizontal section. Fig. 3 is a cross-section on line 3 3 of Fig. 1. Fig. 4 is a vertical perspective view of one of the friction-blocks having a stepped or offset inclined or spreader face, and Fig. 5 is a detail perspective view of one of the antifriction devices or rollers.

In the drawings, A represents that portion of the car-frame to which the draft-rigging is applied, the same being in the example illustrated in the drawings metal center sills.

B is the draw-bar; B′, its yoke; C, the longitudinally-arranged direct-acting draft-rigging spring; D D′, the stops securely anchored to the car-framework, preferably by rivets *d*, and F F′ are the front and rear followers which alternately engage the front and rear stops and coöperate with the draw-bar and its yoke and the spring C. A smaller spring *c* preferably nests within the spring C.

F^2 is the longitudinally-movable friction device, preferably a cylindric shell and preferably made separate from the rear follower F′. The friction device or shell F^2 has an inside cylindric friction-face *f* parallel to the direction of the movement of the draw-bar and preferably is closed at one end by a flanged cup or plug *f*′ and open at the other end for convenient insertion and removal of the springs C *c*. The longitudinally-movable cylindric friction-shell F^2 is further provided at its lower portion with a saddle or support F^3, having laterally-projecting guides or flanges f^2 to engage the removable bottom plate or guide H, which is removably secured in place by bolts *h*, so that by removing this guide H the draft-rigging may be readily removed and replaced.

G G are coöperating longitudinally-movable friction-blocks, having cylindric friction-faces *g g* in sliding frictional engagement with and parallel to the coöperating inside friction-face *f* of the friction-shell F^2. These coöperating friction-blocks G G are each provided with inclined or wedging spreader-faces *g*′ *g*′, each furnished with steps or offset portions g^2 g^2, connected by curved shoulders g^3 g^3. The coöperating friction-blocks G G also have square or right-angle or flat faces g^4 their opposite ends, one affording a bearing for the front follower and the other a bearing for the springs C *c*.

K K are antifriction devices, preferably

rollers, inserted between the inclined or wedging meeting stepped spreader-faces of the friction-blocks G G and maintained in position by the coöperating shoulders g^3 and the steps g^2 of the spreader-faces g' of the friction-blocks. One of the friction-rollers K is located on each side of the longitudinal central line of the draw-bar, or one above and the other below the central line of thrust, so that the interposed friction-rollers will not produce any tilting or canting action of the friction-blocks, and thus avoiding any cutting action between the friction-surfaces of the friction-blocks and the friction-shell. The stepped, inclined, or wedging meeting spreader-faces of the friction-blocks enables the friction-rollers to be made of a size or diameter to afford the necessary strength and rigidity of these parts against crushing and also such size or diameter as will enable the rollers to act efficiently as antifriction devices, while at the same time the meeting spreader-faces of the friction-blocks are retained in juxtaposition to each other, as is required not only for strength, safety, and security for the draft-rigging as a whole, but also on account of the limited room or space which ordinarily can be occupied by the friction-blocks and spring in a draft-rigging, and especially in draft-rigging of a kind to which my invention relates, where the spring is longitudinally arranged in the line of the draw-bar and of the friction-blocks, so that the spring itself will be direct-acting and exert a cushioning effect in addition to and supplementing that produced by the friction devices. The friction-shell F^2 is preferably made of iron or steel pipe, such as used for gas-mains or water-pipe, by cutting the same into suitable lengths. The shell F^2 is fixed to its saddle or support F^3 preferably by rivets f^3, some of which also preferably extend through the flange of the plug f^2.

The front and rear stops D D′ are preferably integral, together forming a side plate or stop-casting D^2, which is also preferably provided with supplemental stops d d' to limit the compression of the springs and the longitudinal movement of the friction-shell F^2.

To prevent the friction-blocks from turning in the friction-shell F^2, which is preferably circular in cross-section, I provide one of the friction-blocks, preferably the lower one, with a longitudinal guide slot or recess g^6 and the interior of the friction-shell F^2 with a projection or guide f^4, the same being preferably the head of a rivet f^5, which extends through the friction-shell F^2 and its saddle or support F^3.

I claim—

1. In a friction draft-rigging, the combination with the draw-bar and its yoke, of side plates furnished with stops, followers, a longitudinally-movable friction-shell, a direct-acting longitudinally-arranged spring within said shell, sliding friction-blocks within said shell having inclined or wedging spreader-faces furnished with steps or offsets, a plurality of antifriction-rollers interposed between the inclined or spreader faces of the friction-blocks, and held in position by the shoulders connecting said steps or offsets, a saddle or support for said friction-shell, and a removable bottom guide or plate upon which said saddle reciprocates, substantially as specified.

2. In a friction draft-rigging, the combination with the draw-bar and its yoke, of side plates furnished with stops, followers, a longitudinally-movable cylindric friction-shell, a direct-acting longitudinally-arranged spring within said shell, sliding friction-blocks within said shell having inclined or wedging spreader-faces furnished with steps or offsets, a plurality of antifriction-rollers interposed between the inclined or spreader faces of the friction-blocks, and held in position by the shoulders connecting said steps or offsets, a saddle or support for said friction-shell, a removable bottom guide or plate upon which said saddle reciprocates, said friction-shell and one of said friction-blocks having interengaging guide devices to prevent the friction-block from turning in the shell, substantially as specified.

3. In a friction draft-rigging, the combination with a longitudinally-arranged spring, stops and followers and the draw-bar and its yoke, of a longitudinally-movable cylindric friction-shell between the followers and having an internal friction-face, sliding friction blocks within said shell having external friction-faces engaging the internal friction-face of said friction-shell, and provided with wedging or inclined meeting faces, and an antifriction-roller between said friction-blocks, having a rolling action of both on said blocks, substantially as specified.

4. In a friction draft-rigging, the combination with a longitudinally-arranged spring, stops and followers and the draw-bar and its yoke, of a longitudinally-movable cylindric friction-shell between the followers and having an internal friction-face, sliding friction-blocks within said shell having external friction-faces engaging the internal friction-face of said friction-shell, and provided with wedging or inclined meeting faces, and an antifriction-roller between said friction-blocks, a saddle supporting said friction-shell, and a bottom plate or guide upon which said saddle reciprocates, substantially as specified.

5. In a friction draft-rigging, the combination with a longitudinally-arranged spring, stops and followers and the draw-bar and its yoke, of a longitudinally-movable cylindric friction-shell between the followers and having an internal friction-face, sliding friction-blocks within said shell having external fric-

tion-faces engaging the internal friction-face of said friction-shell, and provided with wedging or inclined meeting faces, an antifriction-roller between said friction-blocks, and interengaging guide devices on said friction-shell and on one of said friction-blocks to prevent the friction-blocks from turning, substantially as specified.

6. In a friction draft-rigging, the combination with a longitudinally-arranged spring, stops and followers and the draw-bar and its yoke, of a longitudinally-movable cylindric friction-shell between the followers and having an internal friction-face, sliding friction-blocks within said shell having external friction-faces engaging the internal friction-face of said friction-shell, and provided with wedging or inclined meeting faces, an antifriction-roller between said friction-blocks, a saddle supporting said friction-shell, a bottom plate or guide upon which said saddle reciprocates, and means for preventing the friction-blocks from turning in the friction-shell, substantially as specified.

7. In a friction draft-rigging, the combination with a longitudinally-arranged spring, stops and followers and the draw-bar and its yoke, of a longitudinally-movable cylindric friction-shell between the followers and having an internal friction-face, sliding friction-blocks within said shell having external friction-faces engaging the internal friction-face of said friction-shell, provided with wedging or inclined meeting faces, an antifriction-roller between said friction-blocks, a saddle supporting said friction-shell and a bottom or guide upon which said saddle reciprocates, said saddle for the friction-shell having lateral guides or flanges engaging said bottom plate or guide, substantially as specified.

8. In a friction draft-rigging, the combination with the draw-bar and its yoke, a direct-acting longitudinally-arranged spring, stops and followers, of a longitudinally-movable friction-shell, coöperating sliding friction-blocks within the shell and having inclined or wedging spreader-faces furnished with steps or offsets and shoulders connecting the steps or offsets, and a plurality of antifriction-rollers interposed between the inclined or spreader faces of the friction-blocks and held in position by said shoulders connecting said steps or offsets, substantially as specified.

9. In a friction draft-rigging, the combination with the draw-bar and its yoke, a direct-acting longitudinally-arranged spring, stops and followers, of a longitudinally-movable friction-shell, coöperating sliding friction-blocks within the shell and having inclined or wedging spreader-faces furnished with steps or offsets and shoulders connecting the steps or offsets, and a pair of antifriction-rollers interposed between the inclined or spreader faces of the friction-blocks and held in position by said shoulders connecting said steps or offsets, one of said shoulders being above and the other below the central longitudinal line of the draw-bar or line of thrust, substantially as specified.

10. In a friction draft-rigging, the combination with the draw-bar, stops and followers, of a longitudinally-movable friction-shell having an inside curved friction-face, coöperating friction-blocks having exterior curved friction-faces in sliding frictional engagement with the inside friction-face of said shell, and inclined or wedging meeting faces furnished with steps or offsets and antifriction-rollers between said friction-blocks, said friction-blocks having shoulders for holding the rollers in position, substantially as specified.

JOHN F. O'CONNOR.

Witnesses:
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