No. 754,670. PATENTED MAR. 15, 1904.

W. H. MINER.

# FRICTION DRAFT RIGGING FOR RAILWAY CARS.

APPLICATION FILED NOV. 30, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

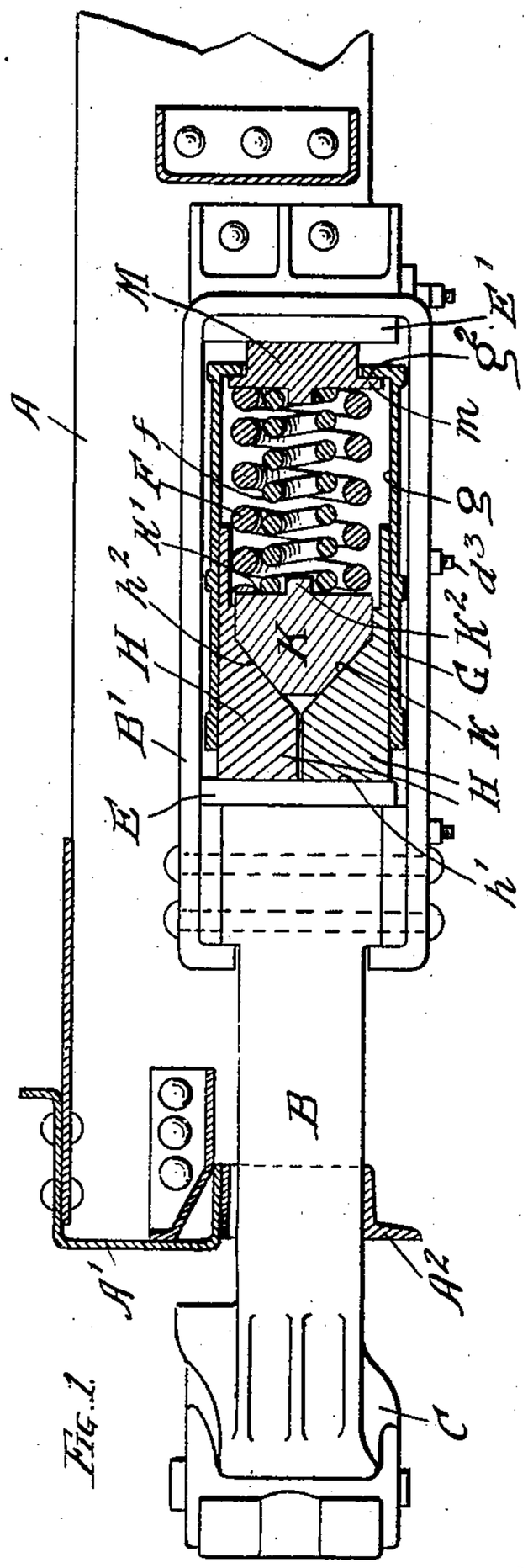


Fig. 1.

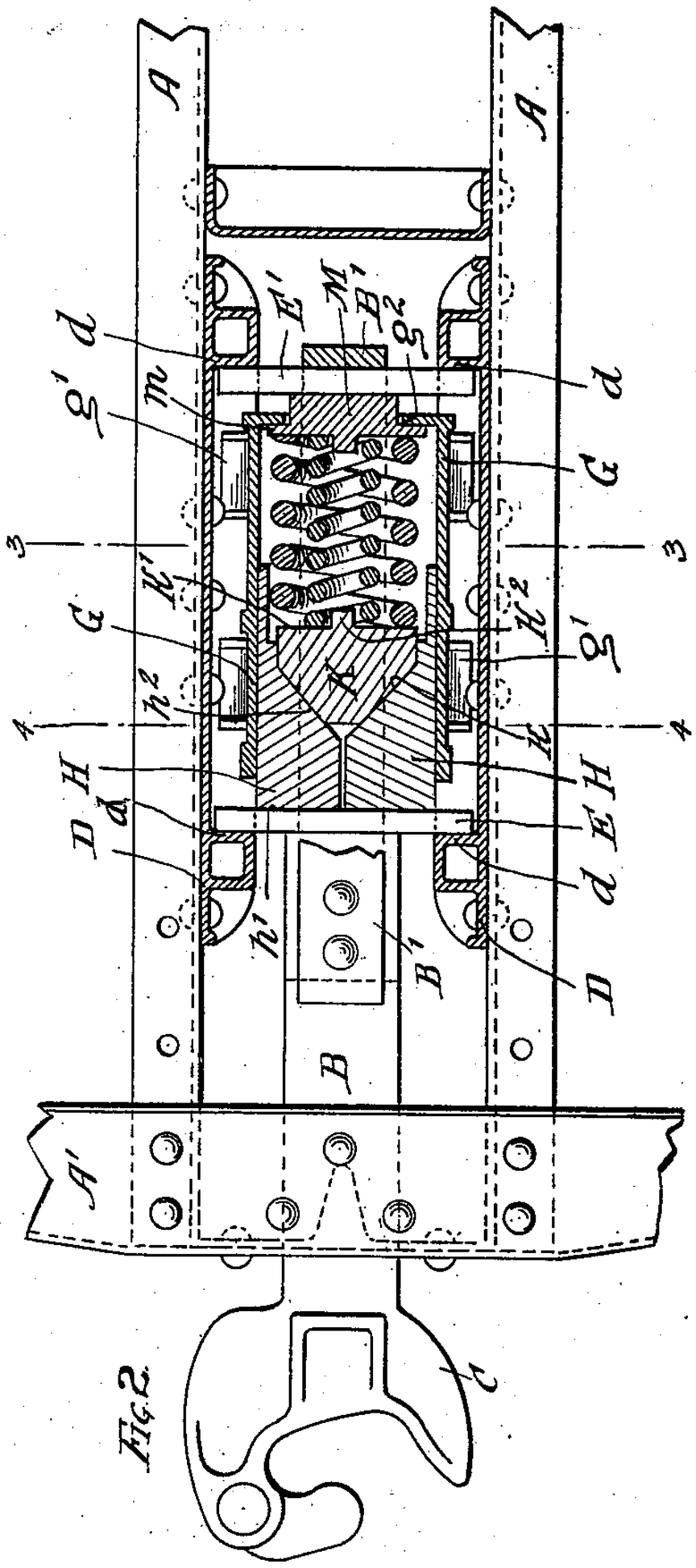


Fig. 2.

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INVENTOR.
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NO MODEL. 2 SHEETS—SHEET 2.

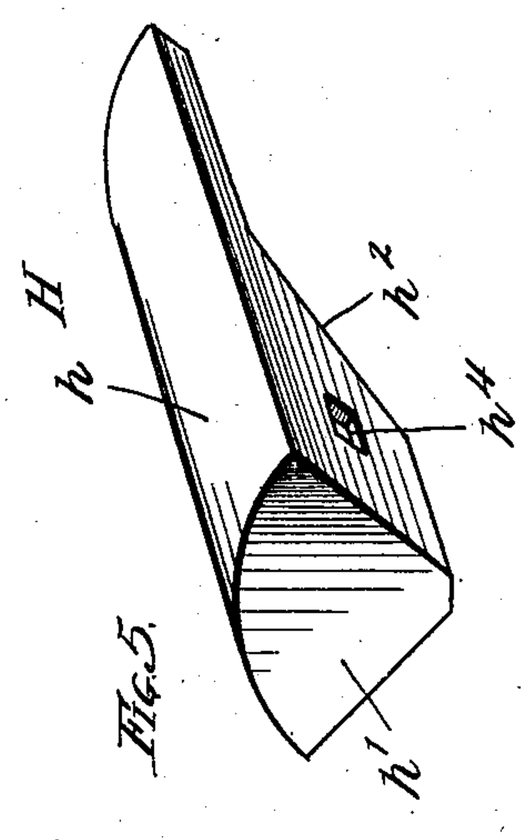


Fig. 5.

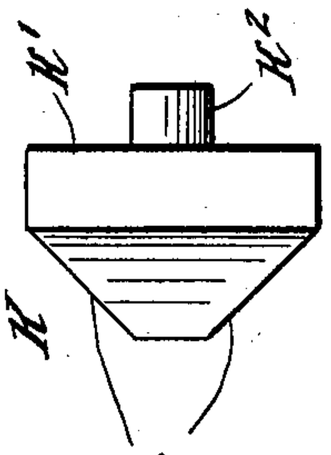


Fig. 7.

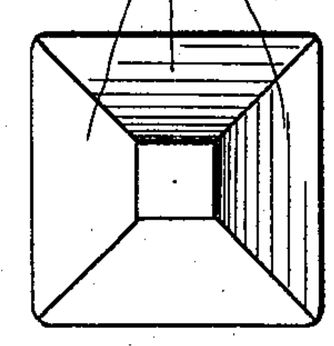


Fig. 6.

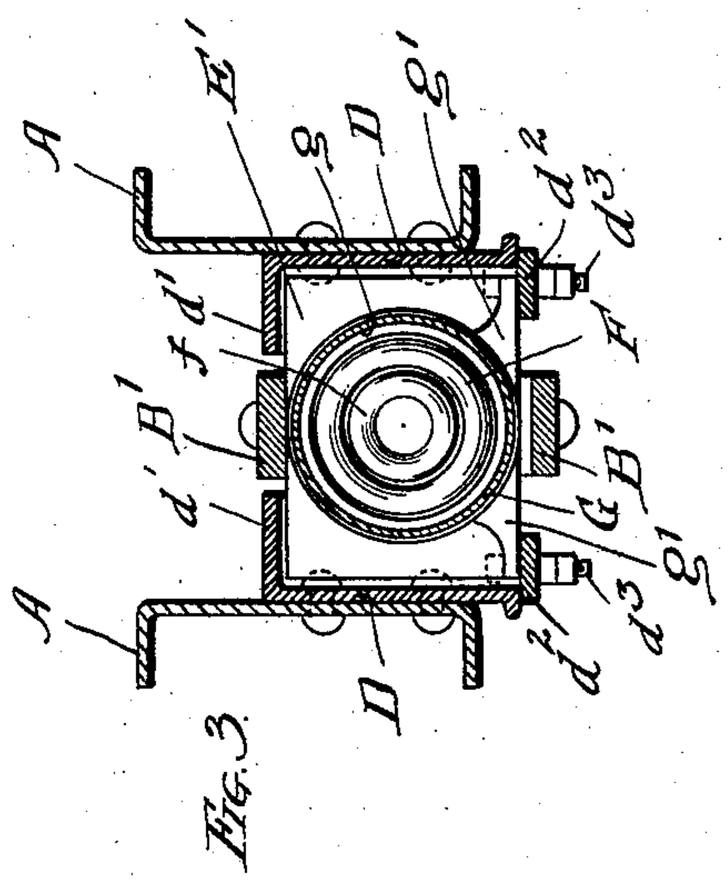


Fig. 3.

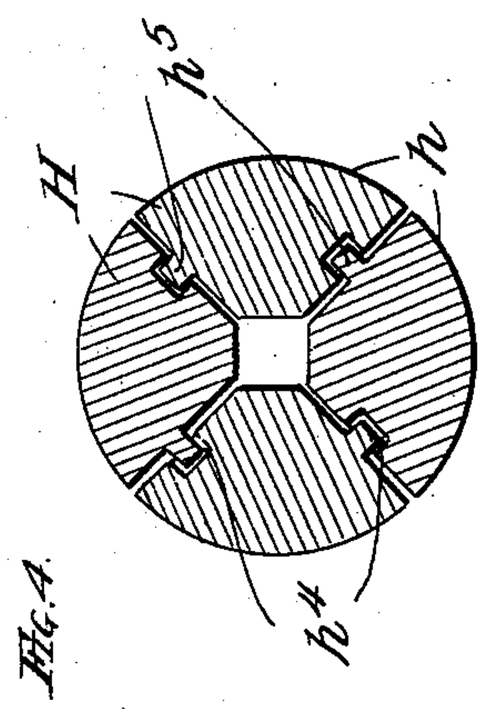


Fig. 4.

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No. 754,670. Patented March 15, 1904.

# UNITED STATES PATENT OFFICE.

WILLIAM H. MINER, OF CHICAGO, ILLINOIS, ASSIGNOR TO W. H. MINER COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

## FRICTION DRAFT-RIGGING FOR RAILWAY-CARS.

SPECIFICATION forming part of Letters Patent No. 754,670, dated March 15, 1904.

Application filed November 30, 1903. Serial No. 183,110. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM H. MINER, 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.

The object of my invention is to provide a friction draft-rigging of a strong, efficient, and durable construction and in which the friction devices are adapted to coöperate with the ordinary longitudinal spring, followers, side plates or stop-castings, draw-bar, and draw-bar strap or extension.

My invention 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, which form a part of this specification, Figure 1 is a central vertical section of a friction draft-rigging embodying my invention. Fig. 2 is a horizontal section; Fig. 3, a cross-section on line 3 3 of Fig. 2. Fig. 4 is a detail cross-section of the sliding segmental friction-blocks. Fig. 5 is a detail perspective view of one of the sliding segmental friction-blocks, and Figs. 6 and 7 are detail views of the wedge.

In the drawings, A represents the draft-timbers or center sills of a car, to which the draft-rigging or its side plates or stop-castings are attached; A′, the front or cross sill, and A² the carry-iron. B is the draw-bar; B′, the draw-bar extension, preferably in the form of a strap or yoke, and C the coupler.

D D are the side plates or stop-castings, having the customary front and rear stops *d d* for the followers E E′ to abut against and upper and lower guides *d′ d²* for the followers to reciprocate in or between, the upper guide *d′* being preferably an integral flange on the side plates or stop-castings D D and the lower guides *d² d²* being preferably removable and secured by bolts *d³* to the side plates or stop-castings D D.

F is a longitudinally-arranged spring directly behind the draw-bar and in the line of draft, there being also, preferably, a small spring *f* nesting within it.

G is a sliding friction shell or case having an interior friction-surface *g*, preferably cylindrical in form. The friction-shell G is provided with integral external feet or projections *g′* to rest and slide upon the guides of the side plates or stop-castings.

H H are coöperating sliding friction-blocks inside the sliding case or shell G, the same being, preferably, four in number and quadrant-shaped in cross-section and having each an external friction-face *h* parallel to and fitting the coöperating friction-face *g* of the sliding friction case or shell G. Each of the segmental sliding friction-blocks H has a square or right-angle end bearing *h′* abutting against the front follower E and an inclined or tapering end face *h²* at its longitudinally-middle portion to abut against one of the correspondingly-inclined faces *k* of the wedge K, the wedge having four faces *k*—one for each of the sliding friction-blocks H—and bearing against said sliding friction-blocks at or near their middle, so as to spread or press the sliding friction-blocks at their middle portions outwardly against their surrounding sliding friction shell or case G, which confines them against outward, radial, lateral, or transverse movement, while permitting the friction-blocks to slide longitudinally in respect to the shell or case. As the sliding friction-blocks are engaged and pressed centrally or medially as to their length by the wedge K the friction-blocks automatically accommodate themselves to the friction shell or case, and the friction-surfaces *h* of the sliding friction-blocks engage the coöperating friction-surface *g* of the shell or case G with a uniform pressure from end to end of the friction-blocks and without any tendency toward causing one end of the friction-blocks to scrape, gouge, or cut into the friction shell or case after the manner of a planing-tool, as is likely to be the case where the friction-blocks are engaged by wedges at both ends thereof, and especially where one of the wedges has a fixed, solid, or unyielding abutment, while the wedge at the opposite end has a yielding or

spring-supported abutment. The wedge K has a flat straight face $k'$, against which one end of the spring F bears, and a central stud $k^2$ for guiding or holding the spring in position. The opposite or rear end of the spring F abuts against the rear follower E′, preferably through an independent or loose spring seat-block M, having an external flange or shoulder $m$, which engages an internal flange or shoulder $g^2$ on the sliding friction case or shell G. The independent spring seat-block M permits a partial initial compression of the spring before the longitudinally-sliding friction-shell G and friction-blocks H begin to slide longitudinally, one in respect to the other, and thus bringing the frictional resistance into action.

In pulling, the sliding friction-blocks H are held stationary by the front follower E and front stops $d$, while the rear follower moves with the draw-bar and first initially compresses the spring F until the rear follower by the further movement comes in contact with the rear end of the friction shell or case G, which is then moved longitudinally forward by the further movement of the draw-bar, and thus adding the frictional resistance of the interengaging sliding friction-surfaces $g$ $h$, which are parallel to the line of draft and longitudinal movement of the draw-bar to the direct resistance of the spring F as the same is further compressed by the further forward movement of the draw-bar. In buffing, the operation is the same, but the reverse, the seat-block M being held stationary by the rear follower E′ and rear stops $d$, while the front follower and friction-blocks H H and friction case or shell G moves with the draw-bar by reason of the frictional grip produced by the spring F and wedge K between the sliding friction-blocks H and case or shell G, thus cushioning the blow by the direct action of the springs F $f$ until the rear end of the shell or case G engages the rear follower E′, when the further rearward movement of the draw-bar will cause the friction-blocks H H to slide in respect to the shell or case G and add the frictional resistance to the direct resistance of the spring as the spring is further compressed by the further rearward movement of the draw-bar. As the sliding friction-blocks H are pressed against the sliding friction-shell G only by a single spring-supported wedge at or near the longitudinal middle of the friction-blocks the frictional engagement, grip, or pressure between the friction-blocks and shell is relieved or proportionately relieved as the spring expands when the draw-bar is relieved from strain, so that there is little tendency of the friction blocks and shell to stick in respect to each other.

The sliding segmental friction-blocks H H are preferably provided on their meeting radial faces with interengaging recesses and projections $h^4$ $h^5$ to keep the same in position or registry with each other.

I claim—

1. In a friction draft-rigging for railway-cars, the combination with the side plates or stop-castings having front and rear stops and upper and lower guides, a draw-bar, draw-bar extension front and rear followers, and longitudinally-arranged spring, of a longitudinally-sliding friction shell or case, alternately held stationary by one follower and longitudinally moved by the other, and having an interior friction-surface longitudinally parallel to the line of draft, and a plurality of segmental longitudinally-sliding friction-blocks inside said friction case or shell, and having each an exterior friction-surface engaging said shell or case and having each a square or right-angle end bearing against one follower, and having each an inclined bearing-face at its longitudinally middle portion, and a wedge, bearing against the inclined faces of said sliding friction-blocks and against one end of the spring, substantially as specified.

2. In a friction draft-rigging for railway-cars, the combination with the side plates or stop-castings having front and rear stops and upper and lower guides, a draw-bar, draw-bar extension, front and rear followers, and longitudinally-arranged spring, of a longitudinally-sliding friction shell or case, alternately held stationary by one follower and longitudinally moved by the other, and having an interior friction-surface longitudinally parallel to the line of draft, and segmental longitudinally-sliding friction-blocks inside said friction case or shell, and having each an exterior friction-face engaging said shell and a square or right-angle end bearing against one follower, and an inclined bearing-face at its longitudinal middle portion, a wedge bearing against the inclined faces of said sliding friction-blocks and against one end of the spring, and an independent seat-block interposed between one of the followers and one end of the spring to permit a partial compression of the spring before the frictional resistance comes into action, substantially as specified.

3. In a friction draft-rigging for railway-cars, the combination with side plates or stop-castings having front and rear stops and upper and lower guides, a draw-bar, draw-bar extension, front and rear followers, a longitudinally-arranged spring bearing at one end against a follower and at the other end against a wedge, of a longitudinally-sliding friction shell or case alternately held stationary by one follower and longitudinally moved by the other, and having an interior friction-surface longitudinally parallel to the line of draft, and a plurality of segmental longitudinally-sliding friction-blocks inside said case or shell, and having each an exterior friction-face in sliding frictional engagement with said shell,

and having each a square or right-angle end bearing against one follower, and having each an inclined bearing-face at its longitudinally middle portion, and a wedge bearing against the inclined faces of said sliding friction-blocks and against one end of the spring, substantially as specified.

4. In a friction draft-rigging for railway-cars, the combination with the side plates or stop-castings having front and rear stops and upper and lower guides, a longitudinally-arranged spring bearing at one end against a follower and at the other end against a wedge, of a longitudinally-sliding friction shell or case alternately held stationary by one follower and longitudinally moved by the other, and having an interior friction-surface longitudinally parallel to the line of draft, and segmental longitudinally-sliding friction-blocks inside said friction case or shell, and having each an exterior friction-face in sliding engagement with said shell, a square or right-angle-end bearing against one follower, and an inclined bearing-face at its longitudinally middle portion, a wedge bearing against the inclined faces of said sliding friction-blocks and against one end of the spring, and an independent seat-block interposed between one of the followers and one end of the spring to permit a partial compression of the spring before the frictional resistance comes into action, substantially as specified.

5. In a friction draft-rigging for railway-cars, the combination with side plates or stop-castings having front and rear stops and upper and lower guides, a draw-bar, draw-bar extension, front and rear followers, and a longitudinally-arranged spring, of a longitudinally-sliding friction shell or case alternately held stationary by one follower and longitudinally moved by the other, and having an interior friction-surface longitudinally parallel to the line of draft, and a plurality of segmental longitudinally-sliding friction-blocks inside said friction case or shell, and having each a square or right-angle end bearing against one follower, and having each an inclined bearing-face, and a wedge bearing against the inclined faces of said sliding friction-blocks and against one end of the spring, substantially as specified.

6. In a friction draft-rigging the combination with side plates or stop-castings having front and rear stops, of front and rear followers, a longitudinally-arranged spring, a draw-bar and draw-bar extension, a longitudinally-sliding friction-shell having an interior friction-face parallel to the draw-bar, a plurality of segmental sliding friction-blocks inside said shell and having exterior friction-faces in sliding frictional contact with the shell, and provided each with square bearings at one end to engage the follower and a wedge bearing against said segmental friction-blocks at their middle, said spring bearing at one end against said wedge and at its other end against said friction-shell, substantially as specified.

7. In a friction draft-rigging the combination with side plates or stop-castings having front and rear stops, of front and rear followers, a longitudinally-arranged spring, a draw-bar and draw-bar extension, a longitudinally-sliding friction-shell having an interior friction-face parallel to the draw-bar, a plurality of segmental sliding friction-blocks inside said shell and having exterior friction-faces in sliding frictional contact with the shell, and provided each with square bearings at one end to engage the follower and a wedge bearing against said segmental friction-blocks at their middle, said spring bearing at one end against said wedge and at its other end against said friction-shell, and a seat-block interposed between the rear end of said spring and said friction-shell, substantially as specified.

8. In a friction draft-rigging, the combination with side plates or stop-castings having front and rear stops, of front and rear followers, a longitudinally-arranged spring, a draw-bar and draw-bar extension, a longitudinally-sliding friction-shell having an interior friction-face parallel to the draw-bar, segmental sliding friction-blocks inside said shell and having exterior friction-faces in sliding frictional contact with the shell and provided with square bearings at one end to engage the follower and a wedge bearing against said segmental friction-blocks at their middle, said spring bearing at one end against said wedge and at its other end against said friction-shell, and a seat-block interposed between the rear end of said spring and said friction-shell, said friction-shell and seat-block having interengaging shoulders, substantially as specified.

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Witnesses:
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H. M. MUNDAY.