No. 754,675. PATENTED MAR. 15, 1904.

P. N. MOORE.

FRICTION DRAFT RIGGING FOR RAILWAY CARS.

APPLICATION FILED NOV. 5, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

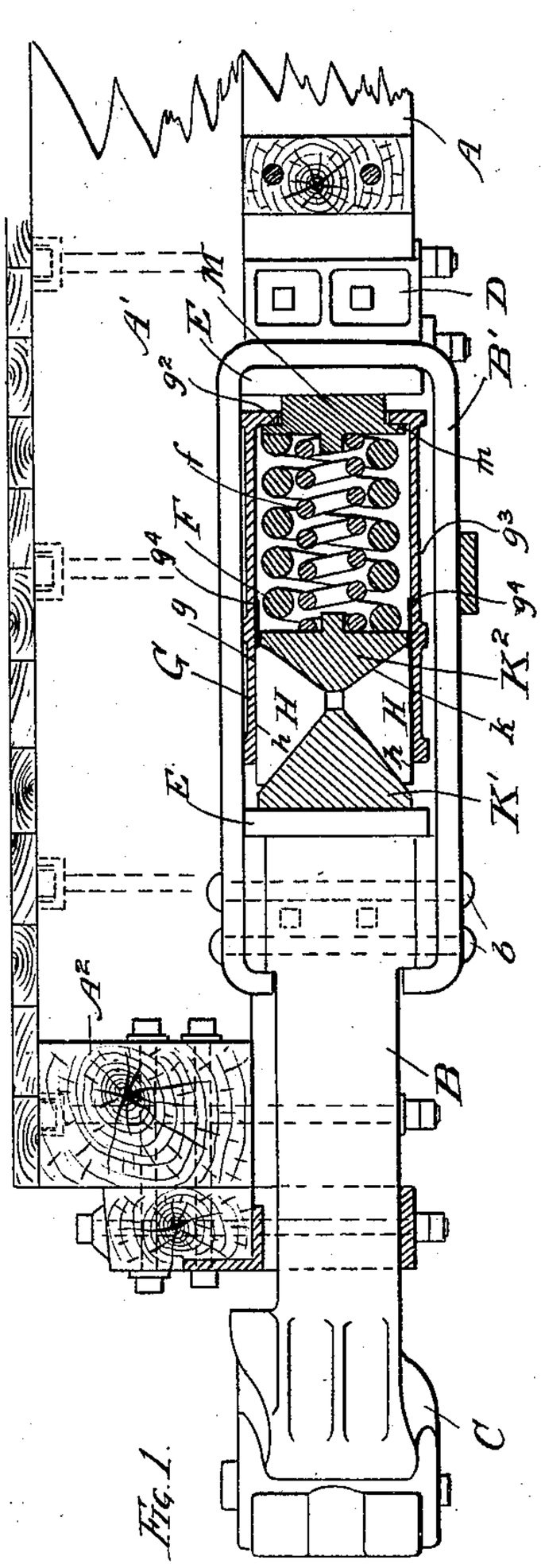

FIG. 1.

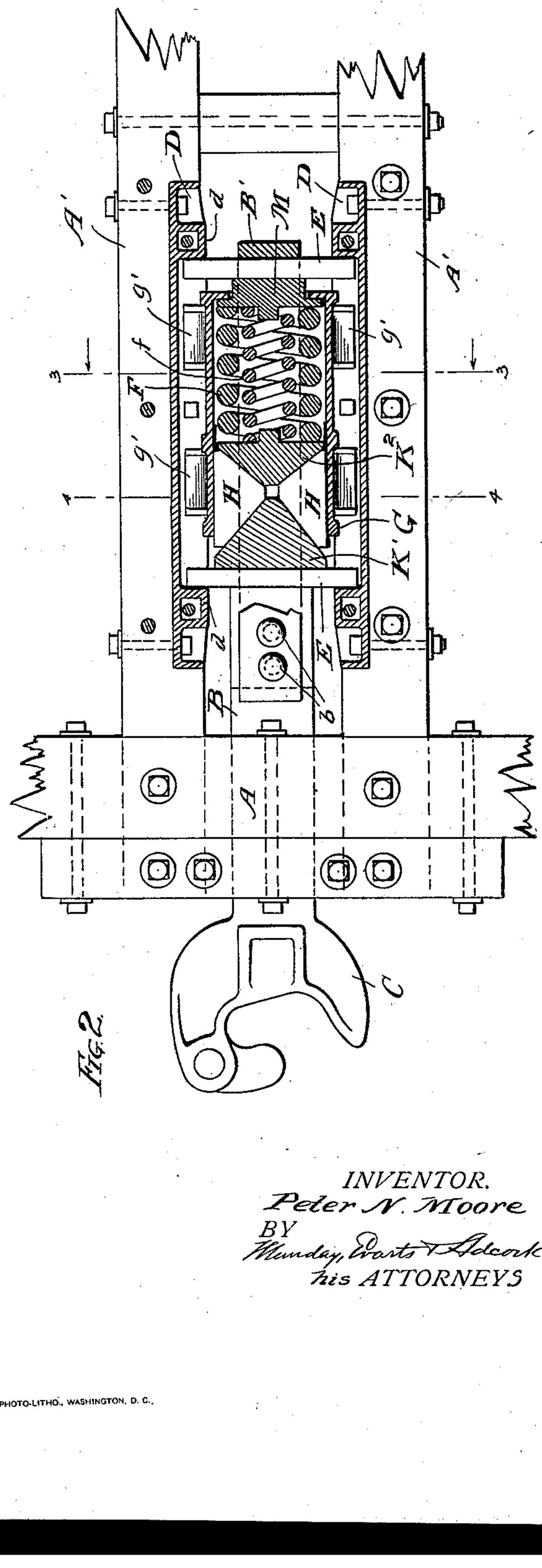

FIG. 2.

WITNESSES:
F. B. Townsend
A. W. Munday.

INVENTOR.
Peter N. Moore
BY
Munday, Evarts & Adcock.
his ATTORNEYS

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NO MODEL. 2 SHEETS—SHEET 2.

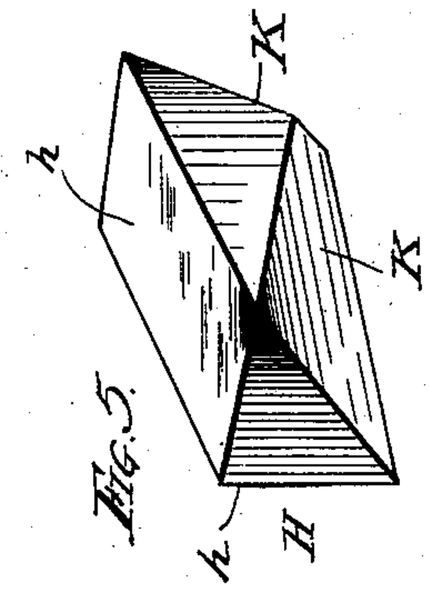

Fig. 5.

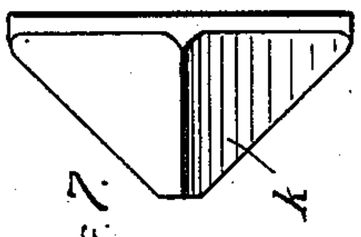

Fig. 7.

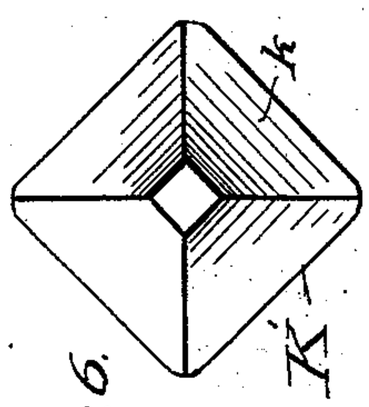

Fig. 6.

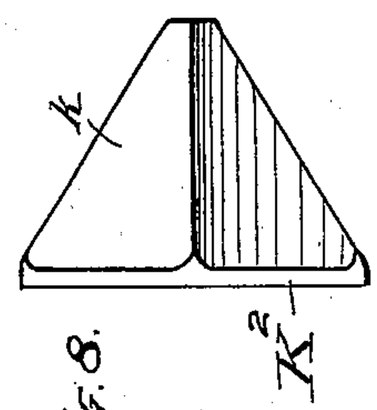

Fig. 8.

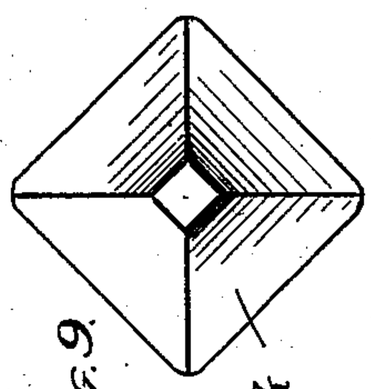

Fig. 9.

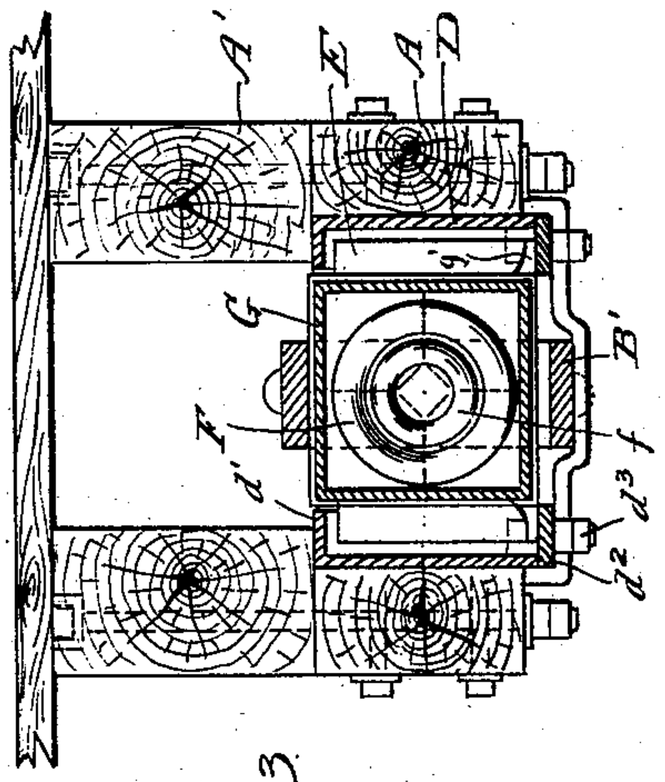

Fig. 3.

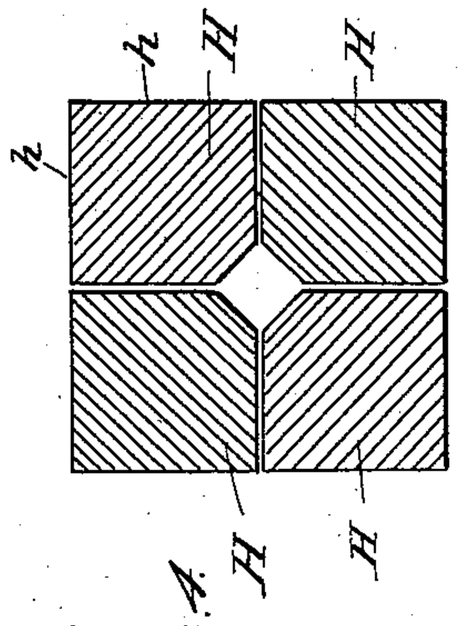

Fig. 4.

WITNESSES:
F. B. Townsend,
H. W. Munday

INVENTOR.
Peter N. Moore
BY
Munday, Evarts & Adcock.
his ATTORNEYS

No. 754,675. Patented March 15, 1904.

UNITED STATES PATENT OFFICE.

PETER N. MOORE, OF MILWAUKEE, WISCONSIN, ASSIGNOR TO JOHN J. HENNESSEY, OF MILWAUKEE, WISCONSIN, AND WILLIAM H. MINER, OF CHICAGO, ILLINOIS.

FRICTION DRAFT-RIGGING FOR RAILWAY-CARS.

SPECIFICATION forming part of Letters Patent No. 754,675, dated March 15, 1904.

Application filed November 5, 1903. Serial No. 179,899. (No model.)

To all whom it may concern:

Be it known that I, PETER N. MOORE, a citizen of the United States, residing in Milwaukee, in the county of Milwaukee and State of Wisconsin, 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 improvements in friction draft-rigging for railway-cars.

My invention consists, in connection with a pair of side plates or stop-castings secured in the customary manner to the draft-timbers of the car, a draw-bar, and draw-bar strap or extension, a longitudinally-arranged spring, and followers, of a rectangular sliding friction shell or case directly behind the draw-bar and in the line of draft and having a plurality of interior friction-surfaces on its several sides, sliding friction-blocks inside said case or shell and confined from lateral or transverse movement thereby and having friction-faces parallel to and in sliding frictional engagement with the several friction-surfaces of the case or shell, wedges for causing the sliding friction-blocks to grip or forcibly press against the friction-surfaces of the shell.

It further consists, in connection with a rectangular or polygonal sliding friction case or shell, of sliding friction-blocks inside the same having wedging or inclined faces at the inner corners thereof and diagonally in respect to the exterior friction-faces of the sliding blocks which engage the interior friction-faces of the sliding friction case or shell in combination with a wedge or wedges the operating inclined faces of which are also cornerwise of the sliding friction-blocks, one inclined operating-face of the wedge thus pressing two exterior friction-faces of each sliding friction-block in contact with the corresponding friction-faces of the sliding friction case or shell.

My invention further consists in the novel construction of parts and devices and in the novel combinations of parts and devices herein shown or described.

In the accompanying drawings, forming a part of this specification, Figure 1 is a central vertical section of a friction draft-rigging or draft-gear embodying my invention. Fig. 2 is a horizontal section. Fig. 3 is a cross-section on line 3 3 of Fig. 2. Fig. 4 is a cross-section on line 4 4 of Fig. 2. Fig. 5 is a detail perspective view of one of the sliding friction-blocks. Figs. 6 and 7 are detail end and side views, respectively, of one of the wedge-blocks; and Figs. 8 and 9 are detail side and end views, respectively, of the other wedge-block.

In the drawings, A represents the draft-timbers, A′ the center sills, and A² the front or cross sill of a car, these parts being represented of an ordinary wood-frame construction.

C is the coupler, B the draw-bar, and B′ the draw-bar extension, the same being represented as in the form of a strap or yoke secured to the draw-bar by bolts *b*.

D D are the side plates or stop-castings, the same having front and rear stops *d* for the followers E E to abut against and upper and lower guides *d*′ and *d*² for the followers to reciprocate in or between, the upper guide *d*′ being preferably integral with the side plates or stop-castings D and the lower guide *d*² being preferably in the form of a removable plate secured by bolts *d*³ to permit the ready insertion and removal of the movable parts of the draft-rigging.

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 the polygonal and, preferably, rectangular sliding friction shell or case, having four interior friction-surfaces *g* on its four sides and feet or projections *g*′ to rest on the lower guide *d*².

H H are coöperating sliding friction-blocks, preferably four in number, or one for each of the four sides of the sliding friction-shell G and each having, preferably, two exterior friction-faces *h h* in sliding frictional engagement with the interior friction-faces *g g* of the case or shell G. Each of the sliding friction-blocks H is furnished with a cornerwise wedging or

inclined face K and preferably with a cornerwise wedging or inclined face K at each end thereof.

K′ and K² are operating-wedges the operating faces or inclines *k* of which are cornerwise of the sliding friction-blocks H and fit against the corresponding inclined or wedging faces K K of the sliding blocks H.

One end of the spring F bears against the front follower E through the interposed operating-wedges K² and K⁴ and sliding friction-blocks H, and the other end of the spring bears against the rear follower E through an interposed seat-block M, which projects through the end of the sliding friction shell or case G and is provided with a shoulder *m*, engaging an interior shoulder g^2 on the shell or case G.

The wedging faces or inclines K at the inner end (the end adjacent to the spring F) of the sliding friction-blocks H are steeper or of a greater angle than those at the outer or other end of the block H, and the faces of the wedge K² are correspondingly of a steeper or greater angle than those of the wedge K′ to cause the release, return, or expanding movement of the spring to be more free and certain and prevent all danger of the parts sticking. This increased angle of the operating-faces of the wedge K² also causes a somewhat greater frictional grip or pressure to be exerted at the outer ends of the sliding friction-blocks H than at their inner ends, and this tends to prevent the sliding friction-blocks H from wearing or producing a shoulder or unevenness on the friction-shell G at or near the inner ends of the block from the back-and-forth movement or play of the friction-blocks H when the train is in motion.

In my invention as the friction-blocks H are held from lateral, transverse, outward, or radial movement by the surrounding friction shell or case G the frictional resistance and wear is exerted by and confined to the parallel sliding frictional surfaces *g* and *h* of the friction-shell and friction-block, respectively, and as these frictional surfaces are inside the inclosing case or shell G the same are protected from grit, dirt, and sand and from the variation and uncertainty of action incident to the presence or absence of such interfering grit, and as in my invention all the friction devices and inclines, wedges, or parts for operating or exerting pressure upon the frictional devices are self-contained and mounted in the sliding friction shell or case and are not secured or attached to the stationary frame of the car or stop-castings the friction devices and their operating wedges or parts always automatically maintain themselves in proper coöperative relation or adjustment with each other, and there is no possibility of these parts being either improperly mounted on or secured to the car-frame or getting out of proper operative relation or adjustment by any giving or yielding of any portion of the framework of the car under severe strains or blows, as is the case where one or more of the friction devices are stationarily secured on the car-frame or stop-castings.

The operation is as follows: Under pulling strains the front follower is held stationary by the front stops *d* on the stop-castings D, and the sliding friction-blocks H are also held from longitudinal movement with the draw-bar through the interposed operating-wedge K′, which abuts against the front follower, while the rear follower moves with the draw-bar, the pulling strain being first primarily cushioned by the direct action of the spring F until it is compressed sufficiently for the rear follower E to abut against the sliding friction shell or case G, when the further forward or pulling movement of the draw-bar causes the friction shell or case G to slide relatively to the friction block or blocks H, which are now held from longitudinal movement by the front follower, the frictional resistance being continuously increased as the spring is further and further compressed, and thus increases the frictional grip or pressure between the friction-shell G and the friction-blocks H, as the shell surrounding and inclosing the friction-blocks H confines the same from lateral or radial movement, while they are at the same time held from longitudinal movement by the front follower. In buffing the operation is the same, but the reverse, the follower E being in buffing held stationary by the rear stops *d* and the front follower moving with the draw-bar and carrying with it the sliding friction-blocks H and friction-shell G until the rear end of the friction-shell G abuts against the rear follower, and is thus in turn held against further longitudinal movement, while the sliding friction-blocks H frictionally grip and frictionally slide against the friction-shell G. The interior of the shell G is preferably of larger size at the portion g^3 thereof which receives and surrounds the spring F than it is at the friction-surface portion *g* thereof to prevent the wear produced by the sliding friction-blocks H from forming a shoulder on the shell at the inner limit of their travel in respect to the shell. The offset or shoulder g^4 between the friction-surface *g* and the enlarged portion g^3 of the shell should be well within the inward limit of travel of the friction-blocks.

I claim—

1. In a friction draft-rigging, the combination with side plates or stop-castings, draw-bar, draw-bar extension and followers, of a spring and frictional resistance mechanism directly behind the draw-bar and in the line of draft, and comprising a longitudinally-arranged spring, rectangular sliding friction-blocks, operating-wedges therefor, and a rectangular sliding friction shell or case sur-

rounding and inclosing said parts, said operating-wedges pressing or spreading said friction-blocks cornerwise of said friction shell or case, substantially as specified.

2. In a friction draft-rigging, the combination with side plates or stop-castings, draw-bar, draw-bar extension and followers, of a spring and frictional resistance mechanism directly behind the draw-bar and in the line of draft, and comprising a longitudinally-arranged spring, rectangular sliding friction-blocks, operating-wedges therefor, and a rectangular sliding friction shell or case surrounding and inclosing said parts, said sliding friction-blocks having wedging or inclined operating-faces at the inner corners thereof, said operating-wedges pressing or spreading said friction-blocks cornerwise of said friction shell or case, substantially as specified.

3. In a friction draft-rigging, the combination with side plates or stop-castings, of a draw-bar and draw-bar extension, a longitudinally-arranged spring and followers, a polygonal sliding friction shell or case having a plurality of interior friction-surfaces, a plurality of polygonal sliding friction-blocks inside said case or shell and confined thereby from lateral or transverse movement, and having exterior friction-faces in sliding frictional engagement with the interior friction-faces of said case or shell, and a plurality of wedges or inclines for causing the sliding friction-surfaces of the friction blocks and shell to forcibly grip or press against each other, said operating-wedges pressing or spreading said friction-blocks cornerwise of said friction shell or case, substantially as specified.

4. In a friction draft-rigging, the combination with side plates or stop-castings, of a draw-bar and draw-bar extension, a longitudinally-arranged spring and followers, a polygonal sliding friction shell or case having a plurality of interior friction-surfaces, a plurality of polygonal sliding friction-blocks inside said case or shell and confined thereby from lateral or transverse movement, and having exterior friction-faces in sliding frictional engagement with the interior friction-faces of said case or shell, and a plurality of wedges or inclines for causing the sliding friction-surfaces of the friction-blocks and shell to forcibly grip or press against each other, said sliding friction-blocks having inclined or wedging operating-faces at each end thereof, said operating-wedges pressing or spreading said friction-blocks cornerwise of said friction shell or case substantially as specified.

5. In a friction draft-rigging, the combination with side plates or stop-castings, of a draw-bar, longitudinally-arranged spring and followers, a rectangular sliding friction-shell having interior friction-faces, sliding friction-blocks inside said shell and confined thereby from lateral or transverse movement, and having each a wedging or inclined face at each end thereof, and a pair of operating-wedges, one at each end of said sliding friction-blocks, said operating-wedges pressing or spreading said friction-blocks cornerwise of said friction shell or case, substantially as specified.

6. In a friction draft-rigging, the combination with side plates or stop-castings, of a draw-bar, longitudinally-arranged spring and followers, a rectangular sliding friction-shell having interior friction-faces, sliding friction-blocks inside said shell and confined thereby from lateral or transverse movement, and having each a wedging or inclined face at each end thereof, a pair of operating-wedges, one at each end of said sliding friction-blocks, and a seat-block for the spring interposed between one end of the spring and one of the followers to permit a partial compression of the spring before the follower engages the friction shell or case, substantially as specified.

7. In a friction draft-rigging, the combination with side plates or stop-castings, of a draw-bar, a longitudinally-arranged spring and followers, of a rectangular sliding friction-shell having a plurality of interior friction-faces, sliding friction-blocks inside said shell and confined thereby from lateral or transverse movement, and having each a plurality of exterior friction-faces engaging said shell, and each a cornerwise wedging or inclined face, and an operating-wedge, substantially as specified.

8. In a friction draft-rigging, the combination with side plates or stop-castings, of a draw-bar, a longitudinally-arranged spring and followers, of a rectangular sliding friction-shell having a plurality of interior friction-faces, sliding friction-blocks inside said shell and confined thereby from lateral or transverse movement, and having each a plurality of exterior friction-faces engaging said shell, and each a cornerwise wedging or inclined face at each end thereof, and a pair of operating-wedges, one at each end of said sliding friction-blocks, substantially as specified.

9. In a friction draft-rigging, the combination with side plates or stop-castings, a draw-bar, draw-bar extension and followers, of a frictional and spring resistance mechanism directly behind the draw-bar and in the line of draft, and comprising a longitudinally-arranged spring, a rectangular sliding friction-shell having interior friction-faces, sliding friction-blocks inside said shell having each a plurality of exterior friction-faces engaging said shell, and operating-wedges for operating or exerting pressure against said sliding friction-blocks diagonally of the sliding friction-shell, substantially as specified.

10. In a friction draft-rigging, the combination with side plates or stop-castings, a draw-bar, draw-bar extension and followers, of a frictional and spring resistance mechanism directly behind the draw-bar and in the line of draft, and comprising a longitudinally-ar-

ranged spring, a rectangular sliding friction-shell having interior friction-faces, sliding friction-blocks inside said shell, operating-wedges for operating or exerting pressure against said sliding friction-blocks diagonally of the sliding friction-shell, and a seat-block for the spring interposed between one end of the spring and one of the followers to permit a partial compression of the spring before the follower engages the friction shell or case, substantially as specified.

11. In a friction draft-rigging, the combination with side plates or stop-castings, draw-bar, draw-bar extension and followers, of a spring and frictional resistance mechanism directly behind the draw-bar and in the line of draft, and comprising a longitudinally-arranged spring, sliding friction-blocks, operating-wedges therefor, and a sliding friction shell or case surrounding and inclosing said parts, the interior portion of said shell surrounding the spring being larger than the friction-surface portion thereof, said operating-wedges pressing or spreading said friction-blocks cornerwise of said friction shell or case, substantially as specified.

12. In a friction draft-rigging, the combination with side plates or stop-castings, draw-bar, draw-bar extension and followers, of a spring and frictional resistance mechanism directly behind the draw-bar and in the line of draft, and comprising a longitudinally-arranged spring, sliding friction-blocks, operating-wedges therefor, and a sliding friction shell or case surrounding and inclosing said parts, said friction-shell having an enlargement at the inner end of its interior friction-surface, said operating-wedges pressing or spreading said friction-blocks cornerwise of said friction shell or case, substantially as specified.

PETER N. MOORE.

Witnesses:
H. M. MUNDAY,
EDMUND ADCOCK.