No. 754,674. PATENTED MAR. 15, 1904.

P. N. MOORE.

FRICTION DRAFT GEAR FOR RAILWAY CARS.

APPLICATION FILED NOV. 5, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

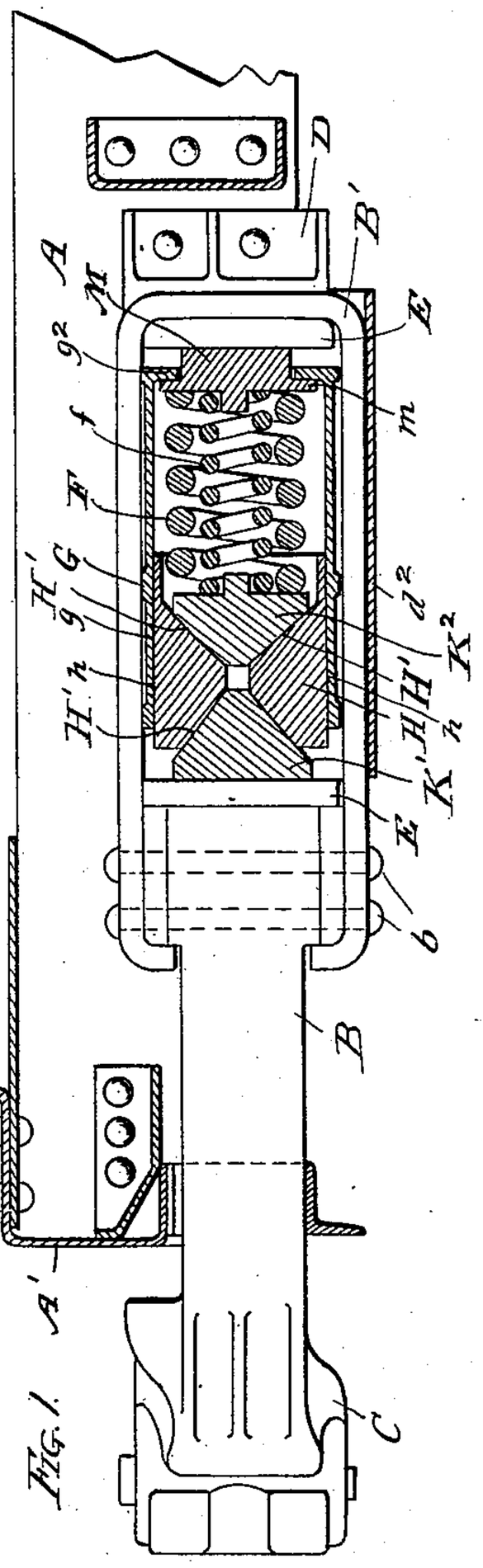

FIG. 1.

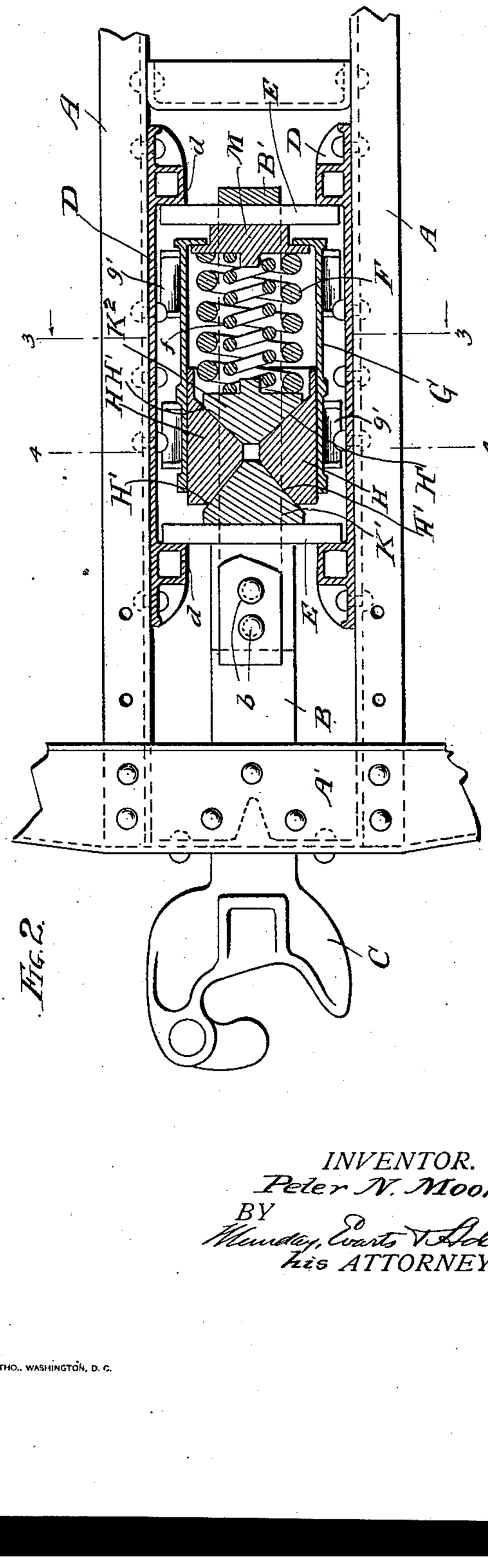

FIG. 2.

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H. P. Whitney

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NO MODEL. 2 SHEETS—SHEET 2.

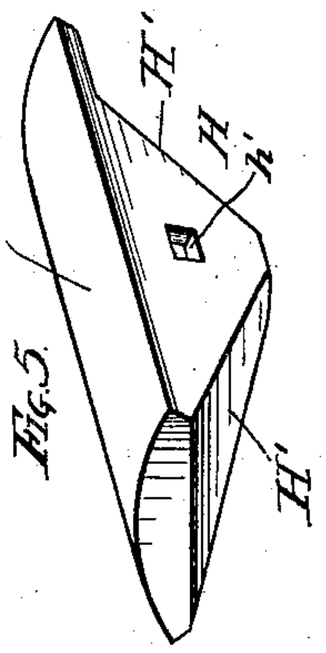

Fig. 5.

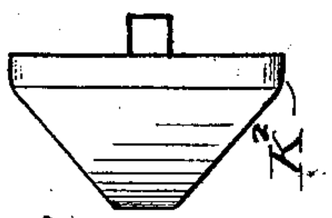

Fig. 7.

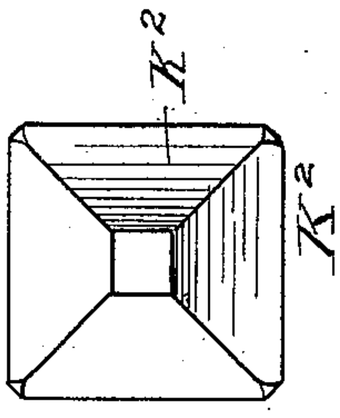

Fig. 6.

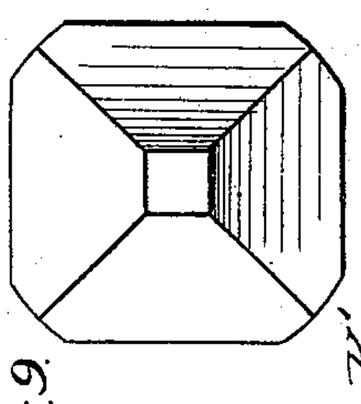

Fig. 9.

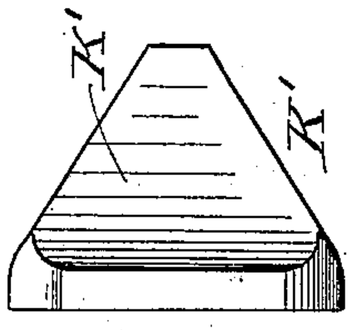

Fig. 8.

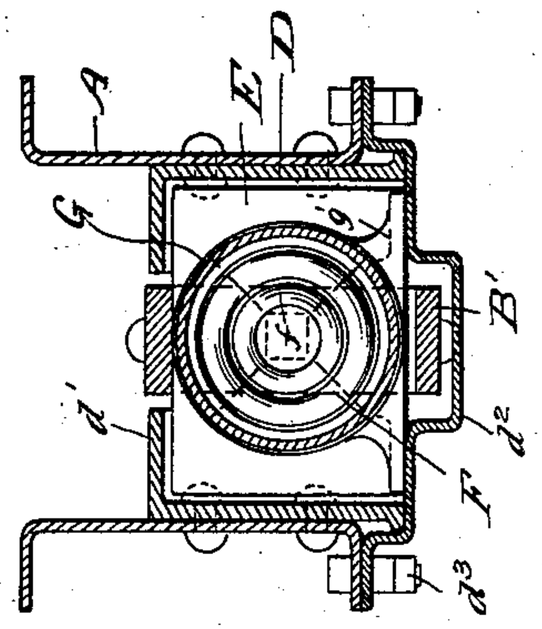

Fig. 3.

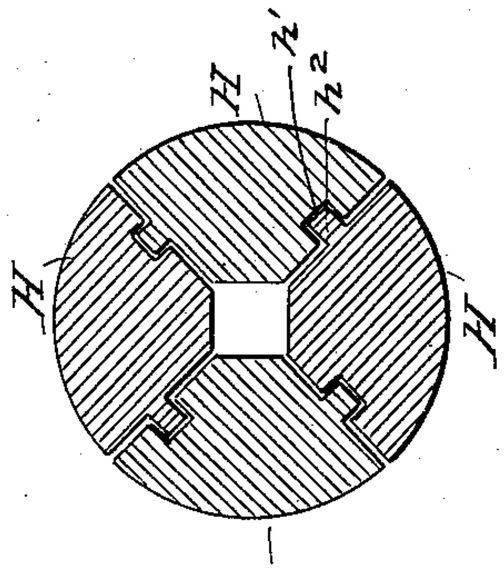

Fig. 4.

WITNESSES:
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No. 754,674. 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-GEAR FOR RAILWAY-CARS.

SPECIFICATION forming part of Letters Patent No. 754,674, dated March 15, 1904.

Application filed November 5, 1903. Serial No. 179,897. (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-Gear for Railway-Cars, of which the following is a specification.

My invention relates to improvements in friction draft rigging or gear for railway-cars.

The object of my invention is to provide a friction draft-rigging of a strong, simple, and durable construction composed of few parts of simple form and capable of being cheaply manufactured and of being easily and conveniently applied to and removed from the car in which the spring and frictional devices are all directly behind the draw-bar and in the line of draft and which may be relied upon to operate with certainty, uniformity, and efficiency in properly cushioning both light and heavy strains, blows, or shocks, both in pulling and buffing, in which the spring and all the frictional devices and operating parts are self-contained in a sliding friction shell or case and none of which are fixedly secured or attached to the stationary frame or stop castings of the car, and in which the customary followers may be employd for primarily operating both the spring and the frictional devices, and in which the cushion of the spring itself is directly utilized for primarily cushioning all strains or blows, light or heavy, and pulling or buffing.

My invention consists in the means I employ to practically accomplish this important object or result and secure these advantages in a single unitary structure or draft-rigging—that is to say, my invention consists, primarily, in connection with a pair of side plates or stop-castings secured in the customary manner to the draft-timbers or center sills of a car and the draw-bar and draw-bar strap or extension a longitudinal spring and a pair of followers, of a sliding friction shell or case having an interior friction-surface, a plurality of sliding friction-blocks inside said case or shell and having each an exterior friction-surface in sliding frictional engagement with the interior friction-surface of the case or shell, 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, 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.

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.

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 or center sills of a car, and A′ the front or cross sill, these parts being represented of an ordinary steel-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 in place 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 sliding friction shell or case, having an interior friction-surface *g*. The sliding friction shell or case G is preferably of cylindrical form and provided with feet or projections *g'* to rest and slide upon the lower guide d^2 of the side plates or stop-castings D, and H is a coöperating sliding friction-block having an exterior friction-surface *h* in sliding frictional engagement with the interior frictional surface *g* of the sliding frictional shell or case G. To cause the requisite frictional grip or pressure upon and between the interengaging friction-surfaces *g* and *h* of the friction shell and block, a plurality of operating wedges or inclines H' K' are employed, the wedge or incline H' being preferably formed on or integral with the sliding friction-block H, and the other, K', abutting against or engaging one of the followers E. The wedge K', however, is preferably made in a separate piece from the follower E, as the followers are ordinarily of wrought metal or steel and require to be of various lengths or sizes for different cars. A plurality of sliding friction-blocks H are preferably employed. As illustrated in the drawings, they are four in number and divided radially into quadrants of a cylinder. The sliding friction block or blocks H are also each provided with a plurality of inclines or wedge faces H', one at each end thereof, and a secondary or supplemental operating-wedge K^2 is employed to engage the second incline H' on each friction-block H.

One end of the spring F bears against the front follower E through the interposed operating-wedges K^2 and K' 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 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 rear 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 friction-shell G being of cylindrical form is very strong to resist the radial or outward pressure of the friction-blocks H, which it holds and confines from lateral or radial movement.

For convenience in assembling the parts and to retain the friction-blocks H in proper relation to or register with each other the same are furnished with a retaining device or means, the same being of any suitable kind or construction. As illustrated in the drawings, the retaining or registering means or device consists in interengaging recesses or lugs h' h^2.

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. In practicing my invention, as will be understood by those skilled in the art, various changes may be made in the construction, form, and shape of the parts.

Each of the operating wedges K′ and K² has a plurality of wedging faces or inclines, one for each sliding friction-block H, and the wedging faces or inclines on the wedge-block K² are preferably steeper or at a greater angle than those on the wedge-block K′ to cause the release, return, or expanding movement of the spring to be more free and certain. 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 uneveness 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.

I claim—

1. In a friction draft gear or rigging, the combination with the side plates or stop-castings, of a draw-bar and draw-bar extension, a longitudinally-arranged spring and followers, a sliding friction shell or case having an interior friction-surface, a plurality of sliding friction-blocks inside said case or shell and confined thereby from lateral or transverse movement and having exterior friction-surfaces in sliding frictional engagement with the interior friction-surface of the 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, 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, said seat-block and said friction shell or case having interengaging shoulders, substantially as specified.

2. In a friction draft gear or rigging, the combination with the side plates or stop-castings, of a draw-bar and draw-bar extension, a longitudinally-arranged spring and followers, a sliding friction shell or case having an interior friction-surface, a plurality of sliding friction-blocks inside said case or shell and confined thereby from lateral or transverse movement and having exterior friction-surfaces in sliding frictional engagement with the interior friction-surface of the case or shell, and having each two inclined or wedging faces, one at each end thereof, a plurality of wedges, one at each end of said friction-blocks, for causing the sliding friction-surfaces of the friction blocks and shell to forcibly grip and press against each other, 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.

3. In a friction draft gear or rigging, the combination with the side plates or stop-castings, of a draw-bar and draw-bar extension, a longitudinally-arranged spring and followers, a sliding friction shell or case having an interior friction-surface, a plurality of sliding friction-blocks inside said case or shell and confined thereby from lateral or transverse movement and having exterior friction-surfaces in sliding frictional engagement with the interior friction-surface of case or shell, and having each two inclined or wedging faces, one at each end thereof, a plurality of wedges one at each end of said friction-blocks for causing the sliding friction-surfaces of the friction blocks and shell to forcibly grip and press against each other, 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, said seat-block and said friction shell or case having interengaging shoulders, substantially as specified.

4. In a friction draft gear or rigging, the combination with the side plates or stop-castings, of a draw-bar and draw-bar extension, a longitudinally-arranged spring and followers, a sliding friction shell or case having an interior friction-surface, a plurality of sliding friction-blocks inside said case or shell having exterior friction-surfaces in sliding frictional engagement with the interior friction-surface of the 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, 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, said friction-shell having at its rear end an internal flange or shoulder g^2, and said seat-block having an exterior shoulder m engaging said interior shoulder on the case or shell, substantially as specified.

5. In a friction draft gear or rigging, the combination with the side plates or stop-castings, of a draw-bar and draw-bar extension, a longitudinally-arranged spring and followers, a sliding friction shell or case having an interior friction-surface, a plurality of sliding friction-blocks inside said case or shell and confined thereby from lateral or transverse movement and having exterior friction-surfaces in sliding frictional engagement with the interior

friction-surface of the 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, 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.

PETER N. MOORE.

Witnesses:
H. M. MUNDAY,
EDMUND ADCOCK.