No. 754,676. PATENTED MAR. 15, 1904.

P. N. MOORE.

TANDEM FRICTION SPRING DRAFT RIGGING FOR RAILWAY CARS.

APPLICATION FILED NOV. 5, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

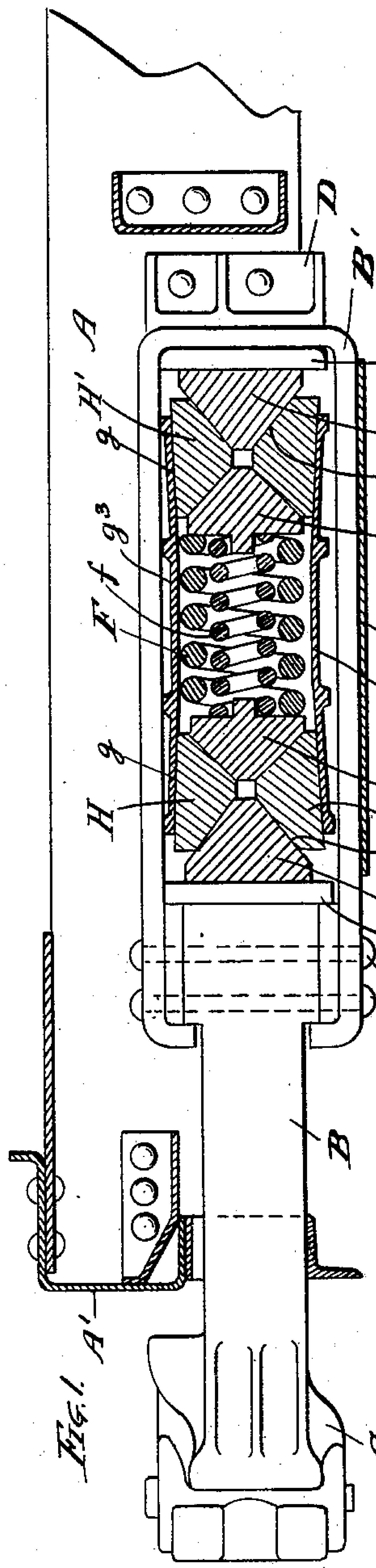

Fig. 1.

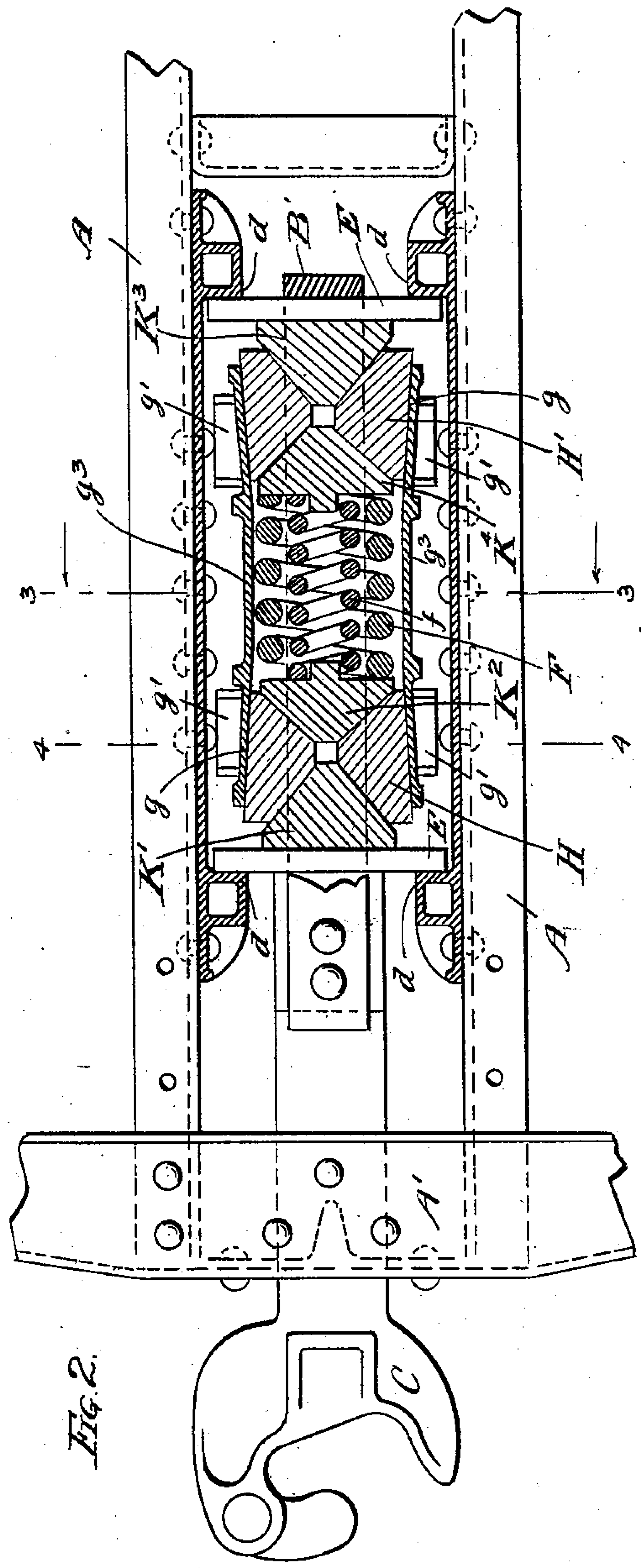

Fig. 2.

WITNESSES:

F. B. Townsend

H. M. Munday

INVENTOR.

Peter N. Moore

BY Munday, Evarts & Adcock.

his ATTORNEYS

No. 754,676. PATENTED MAR. 15, 1904.

P. N. MOORE.

TANDEM FRICTION SPRING DRAFT RIGGING FOR RAILWAY CARS.

APPLICATION FILED NOV. 5, 1903.

NO MODEL. 2 SHEETS—SHEET 2.

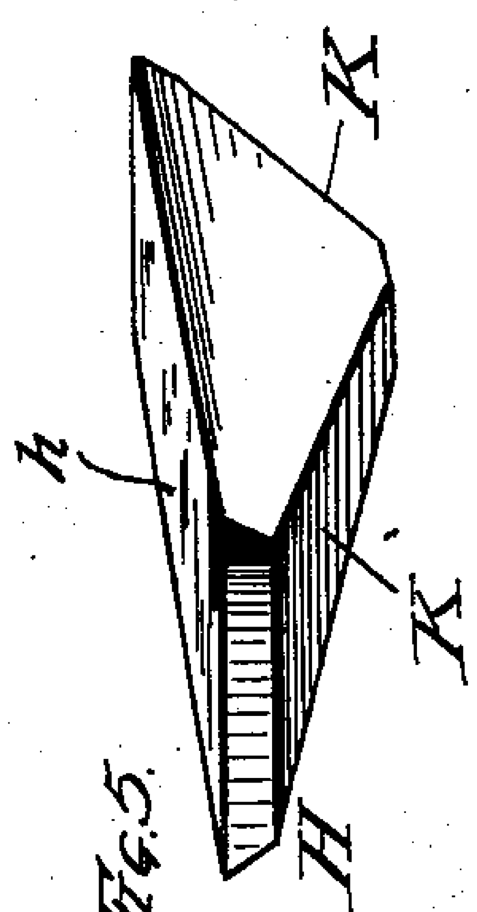

Fig. 5.

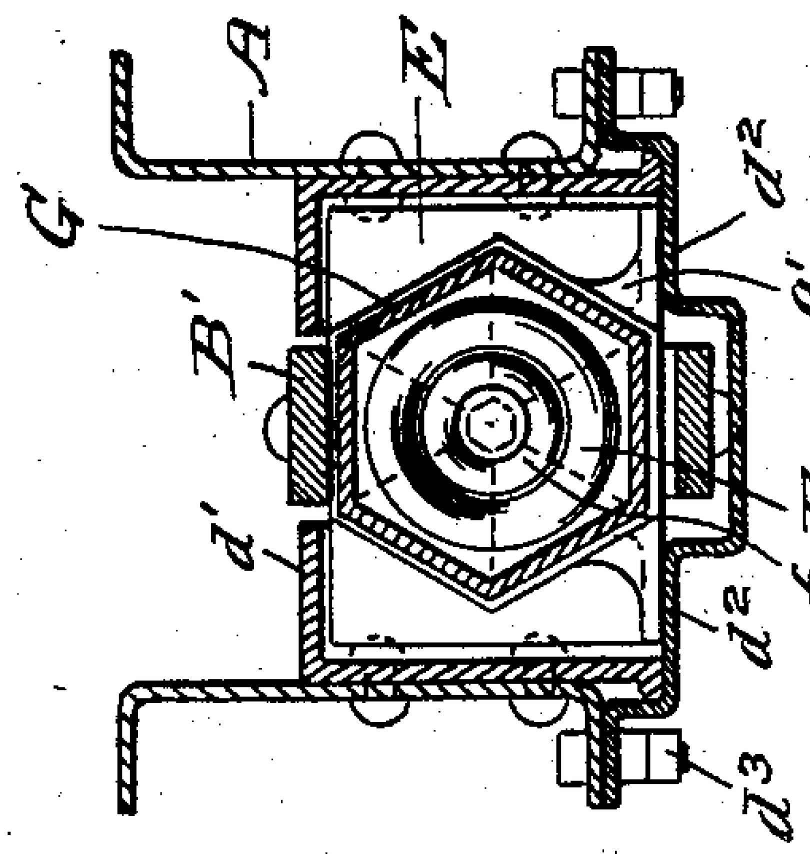

Fig. 3.

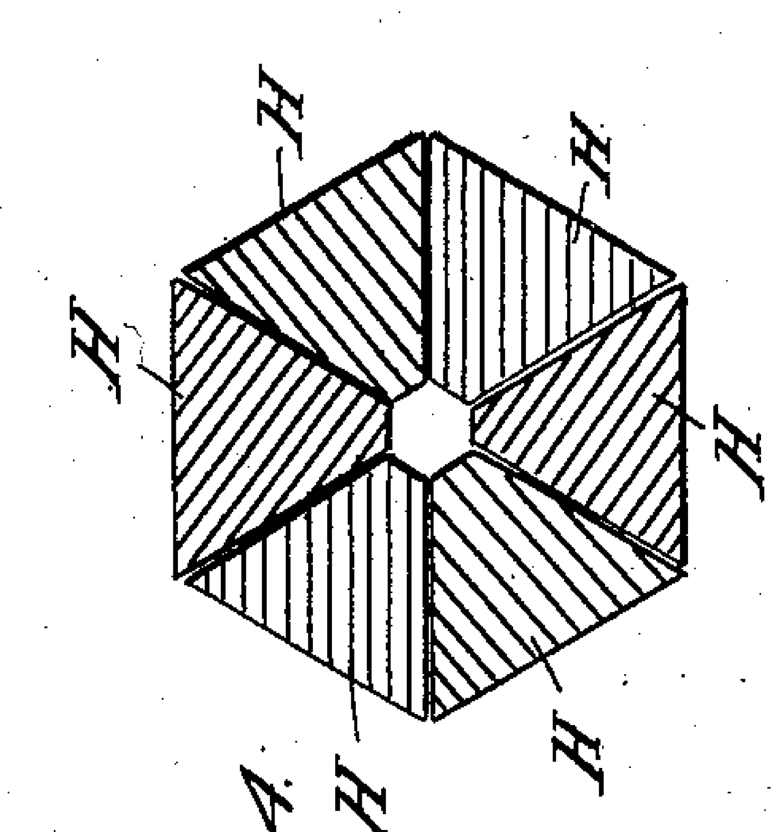

Fig. 4.

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

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

No. 754,676. 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.

TANDEM FRICTION SPRING DRAFT-RIGGING FOR RAILWAY-CARS.

SPECIFICATION forming part of Letters Patent No. 754,676, dated March 15, 1904.

Application filed November 5, 1903. Serial No. 179,900. (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 Tandem Friction Spring Draft-Rigging for Railway-Cars, of which the following is a specification.

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

The object of my invention is to provide a tandem friction spring 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 employed 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 object or result—that is to say, it consists in connection with a pair of side plates or stop-castings secured to the draft-timbers or center sills of a car, a draw-bar and draw-bar yoke, strap, or extension, a single longitudinally-arranged spring, and a single pair of followers, of a tandem frictional resistance mechanism comprising a sliding friction shell or case having an interior friction-surface at each end thereof and two tandem-arranged coöperating friction-blocks or sets of 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 and a plurality of wedges or inclined faces for causing the sliding friction-blocks to frictionally grip or forcibly press against the friction shell or case. The sliding friction-blocks at each end of the sliding friction-shell are preferably six in number and each triangular in cross-section. Each sliding friction-block is preferably provided with an inclined or wedging face at each end thereof. There are preferably four operating-wedges employed, each having an inclined or wedge face for each of the sliding friction-blocks which it engages and operates.

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 tandem friction spring 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. 5. Fig. 5 is a detail perspective view of one of the sliding friction-blocks.

In the drawings, A represents the draft-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 interior friction-faces g g at each end thereof, the same being preferably hexagonal in cross-section and having six interior friction-faces g at each end thereof. The sliding friction-shell G is provided with feet or projections g' on each side to rest and slide upon the lower guide d^2 of the side plates or stop-castings D.

H H′ are coöperating tandem-arranged sliding friction-blocks, having each an exterior friction-face h in sliding frictional engagement with one of the interior friction-faces g of the sliding friction case or shell G. The friction-blocks of each tandem set H H′ are preferably six in number, one for each of the hexagonal friction-faces g of the sliding friction-shell G. Each of the sliding friction-blocks H H′ is preferably provided with an operating wedging or inclined face K at each end thereof. The sliding friction-blocks H H′ are caused to frictionally grip or be forcibly pressed against the corresponding friction-faces of the sliding friction-shell G by operating-wedges K′ K^2 and K^3 K^4, each having a plurality of wedging or inclined faces k, one for each of the sliding friction-blocks H or H′. The wedging faces or inclines k on the wedges K^2 and K^4 are preferably steeper or at a greater angle than those on the wedges K′ K^3 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 wedges K^2 K^4 also causes a somewhat greater frictional grip or pressure to be exerted at the outer ends of the sliding friction-blocks H H′ than at their inner ends, and this tends to prevent the sliding friction-blocks H H′ from wearing or producing any shoulder or unevenness on the friction-shell G at or near the inner ends of the friction-blocks H H′ from the back-and-forth movement or play thereof when the train is in motion. The interior friction-surfaces g of the sliding friction-shell G are preferably formed on a slight taper in respect to the straight portion g^3 of the interior of the shell G, the taper terminating near the inner end of the sliding friction-blocks, and this also causes the interior friction-surfaces of the shell G to continually wear smooth and to prevent the formation of shoulders at or near the inner ends of the sliding friction-blocks H or H′.

One end of the longitudinal 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 F bears against the rear follower E through the interposed operating-wedges K^4 and K^3 and tandem sliding friction-blocks H′.

The tandem friction-blocks H H′ are held from central transverse outward or radial movement by the surrounding friction shell or case G, and the frictional resistance and wear is exerted by and confined to the parallel sliding frictional surfaces g and h of the friction-shell and tandem friction-blocks, 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 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 to 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 and carries with it the rear tandem friction-blocks H′ through the interposed operating-wedge K^3, and thus causing the tandem-arranged friction-blocks H and H′ to frictionally slide in respect to the sliding friction-shell G, and thus adding frictional resistance at both ends of the shell G to the resistance of the spring, the frictional resistance increasing as the tension of the spring increases by its compression as the friction-shell G surrounding and inclosing the friction-blocks H H′ confines the same from lateral or radial movement, while the front blocks H are held from longitudinal movement by the front follower. As the tension or pressure of the spring is of course the same at both its ends, the frictional resistance is thus doubled by employing two sets of friction-blocks H H′, one at each end of the shell G. In buffing the operation is the same, the rear follower and friction-block H′ being then held stationary, while the front follower and friction-blocks H move with the draw-bar. As the interior friction-surface g of the sliding friction-shell G is slightly tapering, as the friction-blocks H H′ slide inward in respect to the shell the operating-wedges K′ K^3 will compensatingly move outward in respect to the friction-blocks H H′, such outward movement of the wedges being, however, infinitesimal, so to speak, as the taper of the wedges is steep, approximately forty-five degrees, while that of the friction-surfaces *g* is very slight, just sufficient to prevent the formation of a shoulder by the wear of the friction-blocks against the interior of the shell.

I claim—

1. 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 sliding friction-shell having interior friction-surfaces at each end thereof, a plurality of sliding friction-blocks inside said shell at each end thereof and confined thereby from lateral or transverse movement, said friction-blocks having each a wedging or inclined face at each end thereof, substantially as specified.

2. In a friction draft-rigging, the combination with side plates or stop-castings, of a draw-bar, a longitudinally-arranged spring and followers, a sliding friction-shell having interior friction-surfaces at each end thereof, a plurality of sliding friction-blocks inside said shell at each end thereof and confined thereby from lateral or transverse movement, and having each wedging or inclined faces at each end thereof, and two pairs of operating-wedges, one wedge being at each end of each set of sliding friction-blocks, substantially as specified.

3. In a friction draft-rigging, the combination with side plates or stop-castings, of a draw-bar, a longitudinally-arranged spring and followers, a hexagonal sliding friction-shell having interior friction-faces at each end thereof, two tandem sets of sliding friction-blocks, triangular in cross-section, inside said shell and confined thereby from lateral or transverse movement, and operating-wedges, substantially as specified.

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

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

PETER N. MOORE.

Witnesses:
H. M. MUNDAY,
EDMUND ADCOCK.