No. 754,932. PATENTED MAR. 15, 1904.

P. N. MOORE.

FRICTION DRAFT GEAR FOR RAILWAY CARS.

APPLICATION FILED NOV. 5, 1903.

NO MODEL. 2 SHEETS—SHEET 1.

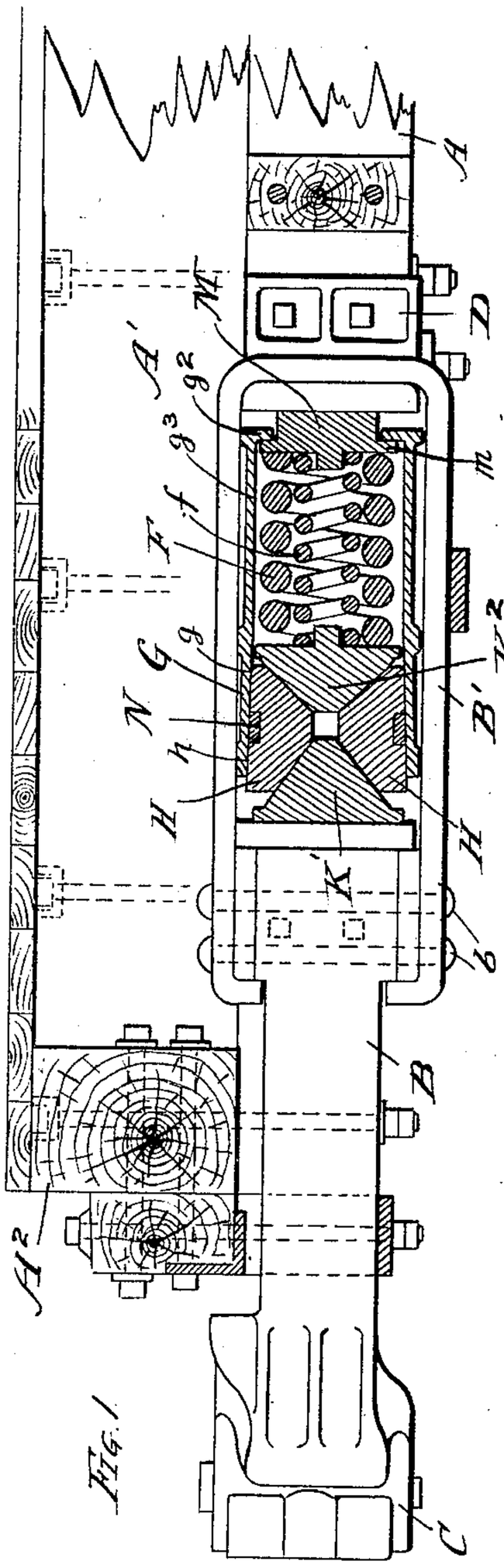

FIG. 1

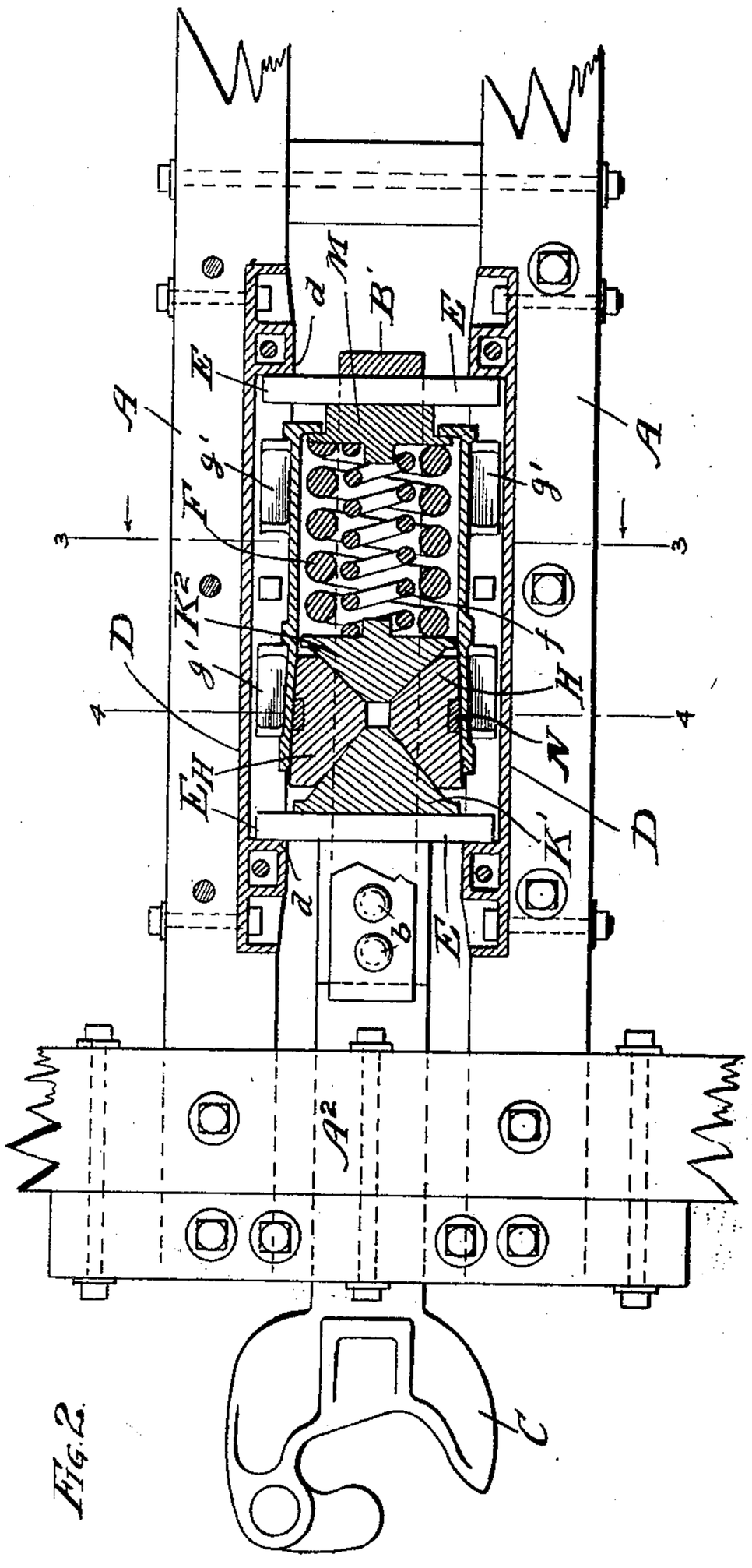

FIG. 2

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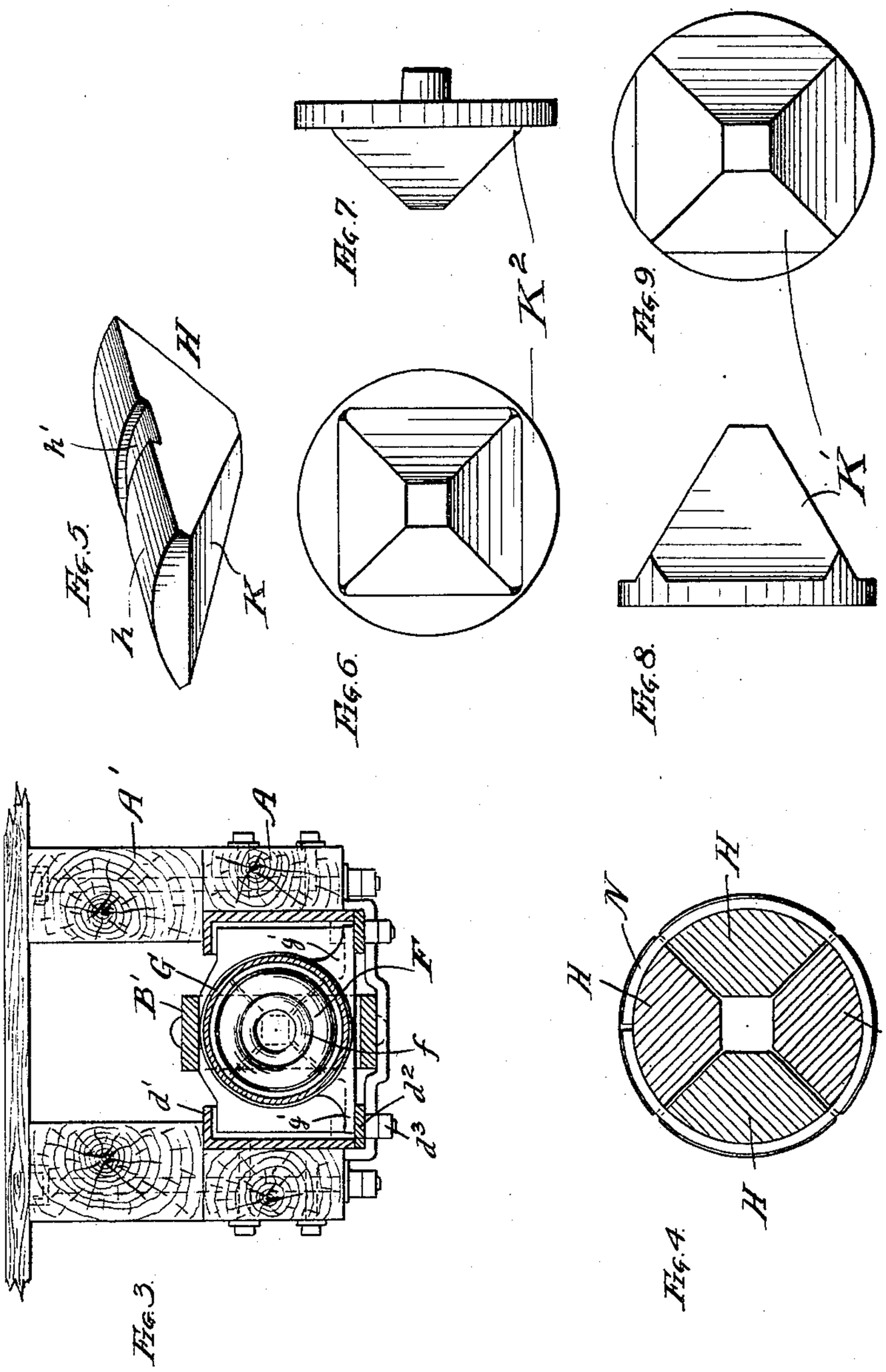

FIG. 3.

FIG. 5.

FIG. 7.

FIG. 6.

FIG. 9.

FIG. 8.

FIG. 4.

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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. 754,932, dated March 15, 1904.

Application filed November 5, 1903. Serial No. 179,898. (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.

My invention 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.

The friction draft-rigging embodying my invention comprises in coöperative combination a pair of side plates or stop-castings secured to the draft-timbers or center sills of a car, a draw-bar, a draw-bar extension, preferably in the form of a strap or yoke, a longitudinal spring and a pair of followers, a sliding friction shell or case having an interior friction-surface, slightly tapering and terminating in straight portion, sliding friction-blocks inside the sliding friction shell or case and having exterior friction-surfaces in sliding frictional engagement with and corresponding to the slightly-tapering interior friction-surface of the case or shell, a light spring or band surrounding said sliding friction-blocks and fitting in a groove in their outer periphery, said friction-blocks having wedging or inclined faces at the ends thereof, and an operating wedge-block at each end of said sliding friction-blocks for causing the sliding friction-blocks to frictionally grip and press against the exterior sliding friction-shell. As the interior surface of the sliding friction-shell is in part straight and in part slightly tapering, the back-and-forth movement or play of the sliding friction-blocks will cause the interior friction-surface of the shell to continually wear in the same shape, and thus prevent the back-and-forth movement or play of the sliding friction-blocks when the train is under motion from wearing or forming a shoulder on the interior surface of the friction-shell at or near the inner end of the sliding friction-blocks.

In the drawings, A represents the draft-timbers, A′ the center sills, and A^2 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 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, the same being preferably cylindrical in form and having in part a slightly-tapering interior friction-surface *g* and in part a straight surface g^3. The friction-shell G is provided with feet or projections *g′* to rest and slide upon the lower guide d^2 of the slide plates or stop-castings D.

H H are coöperating sliding friction-blocks, having each an exterior slightly-tapering fric-

tion-surface *h* in sliding frictional engagement with the interior friction-surface *g* of the sliding friction case or shell G. Each of the sliding friction-blocks H is provided at each end with a wedging or inclined face K, engaging the corresponding inclined or wedging faces of the wedges K′ K². The sliding friction-blocks H are preferably four in number and quadrant-shaped in cross-section. The sliding friction-blocks H are furnished with a circumferential groove *h′* to receive a light spring or band N, which serves to hold the sliding friction-blocks in assembled position or registry with each other.

One end of the spring F bears against the front follower E through the interposed operating-wedges K² 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-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 held in turn 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. Owing to the interior surface of the sliding friction-shell G being part straight and in part formed on a slight taper, the wear of the sliding friction-blocks H thereon operates to keep the interior friction-surface of the shell smooth and prevents the formation of a shoulder at or near the inner end of the sliding friction-blocks H.

Each of the operating-wedges K′ 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 or 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 thus 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 blocks H under the ordinary back-and-forth movement or play of the friction-blocks H when the train is in motion.

In my friction draft-rigging the friction-blocks H are held from lateral, 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 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.

Owing to the slight taper of the friction-surfaces *g h* of the shell G and block H, as the blocks H move inward in respect to the shell the wedges K′ K² will move slightly outward in respect to the blocks H to compensate for the slight taper of the friction-surfaces *g* and *h*; but this outward movement of

the wedges K′ K² in respect to the blocks H will be infinitesimal, so to speak, because the incline of the wedges is steep, substantially forty-five degrees, while that of the frictional surfaces *g h* is very slight.

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 an interior friction-surface, 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 friction-blocks being provided with a peripheral groove and a spring or band surrounding the same and fitting in said groove, 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, of a sliding friction-shell having a slightly-tapering interior friction-surface terminating in a straight portion, 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, whereby the friction-surface of the shell is caused to continually wear smooth, substantially as specified.

3. In a friction draft-gear, the combination with stationary stop-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 a slightly-tapering interior friction-surface terminating in a straight portion, sliding friction-blocks inside said case or shell and confined thereby from lateral or transverse movement, and having each a slightly-tapering exterior friction-surface in sliding frictional engagement with the interior friction-surface of the case or shell, and wedges or inclines for causing said sliding friction-block and sliding friction-shell to forcibly grip or press against each other, substantially as specified.

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Witnesses:
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