J. F. O'CONNOR.

FRICTION DRAFT RIGGING.

APPLICATION FILED OCT. 18, 1909.

981,675.

Patented Jan. 17, 1911.

2 SHEETS—SHEET 1.

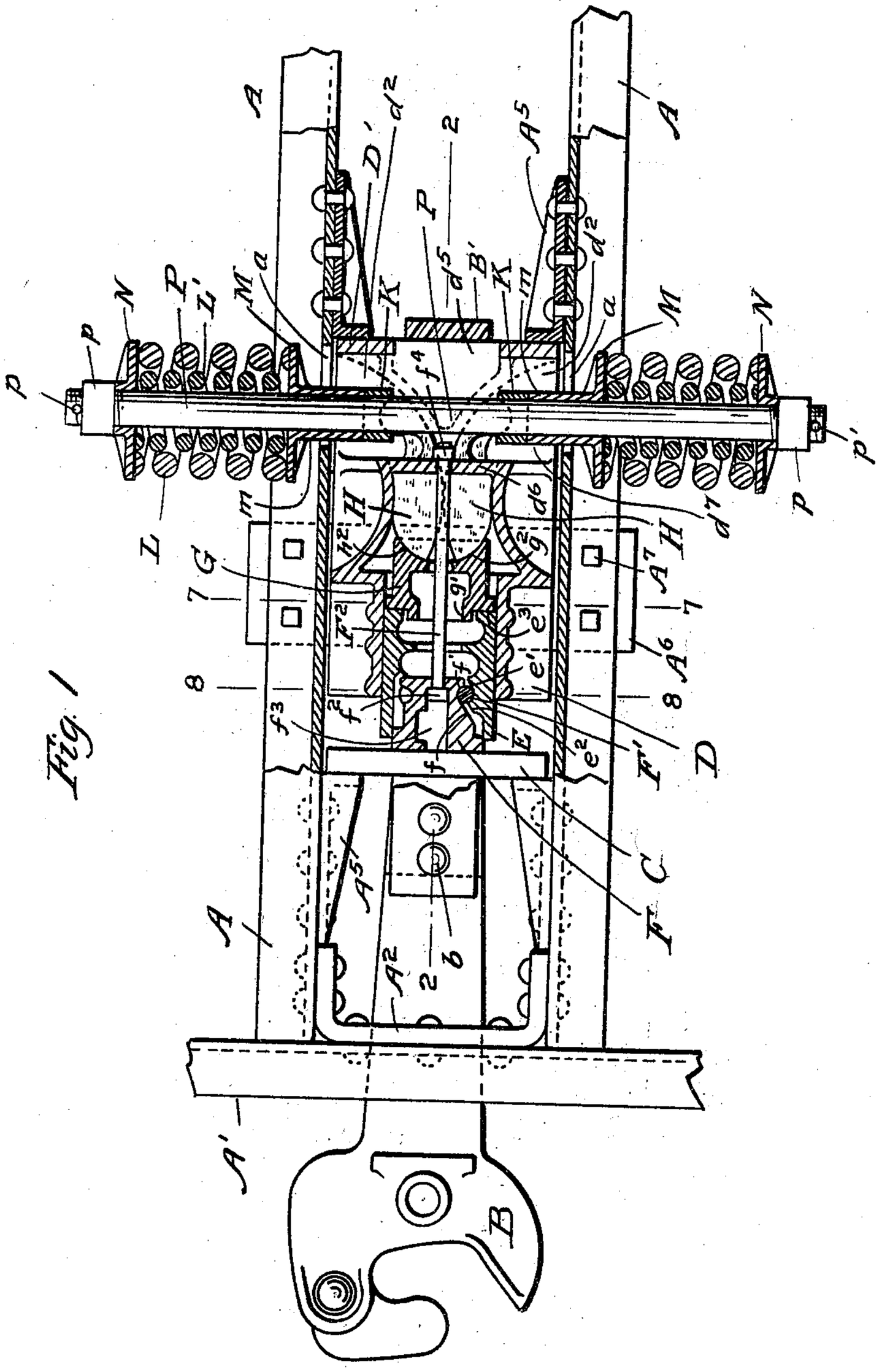


Fig. 1

WITNESSES:

F. B. Townsend

Pearl Abrams.

INVENTOR

John F. O'Connor

BY Munday Evarts, Adcock & Clarke

his ATTORNEYS

J. F. O'CONNOR.

FRICTION DRAFT RIGGING.

APPLICATION FILED OCT. 18, 1909.

981,675.

Patented Jan. 17, 1911.

2 SHEETS—SHEET 2.

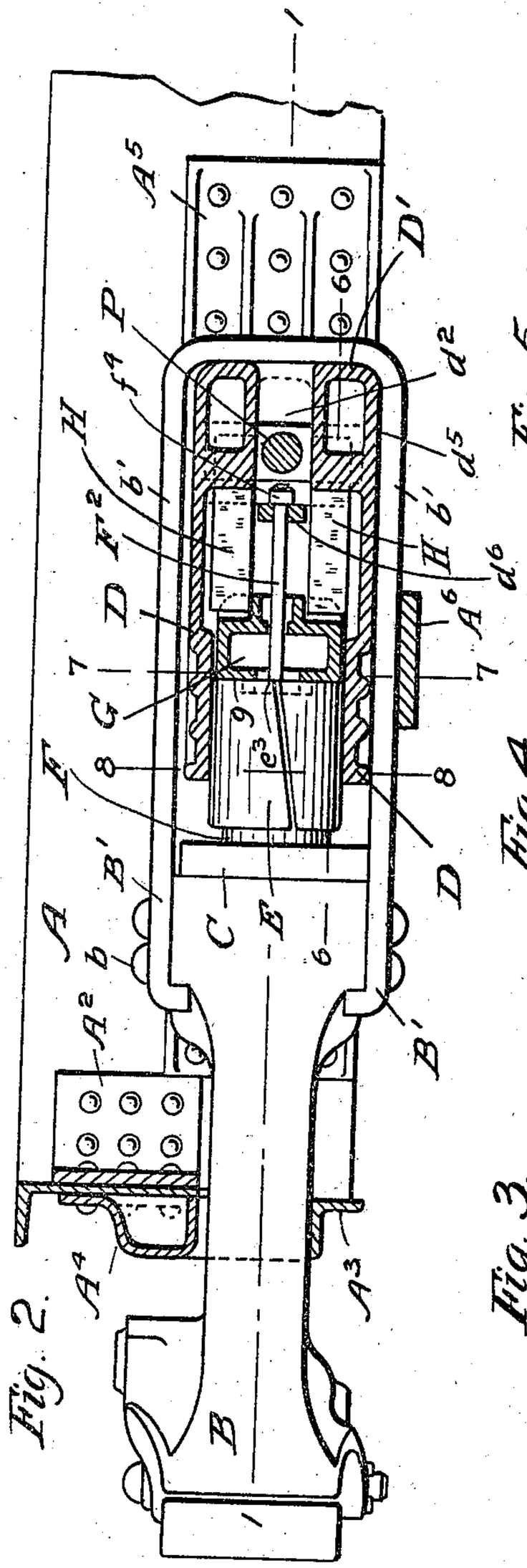


Fig. 2.

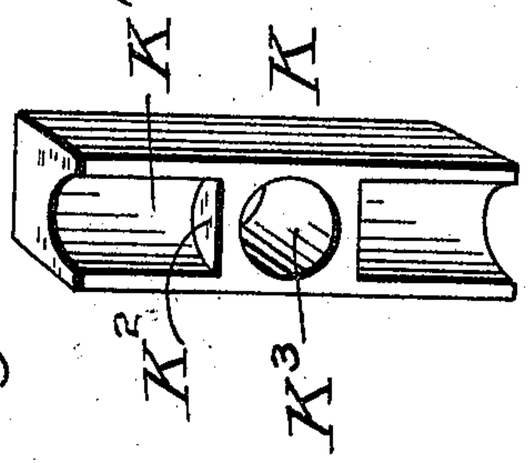
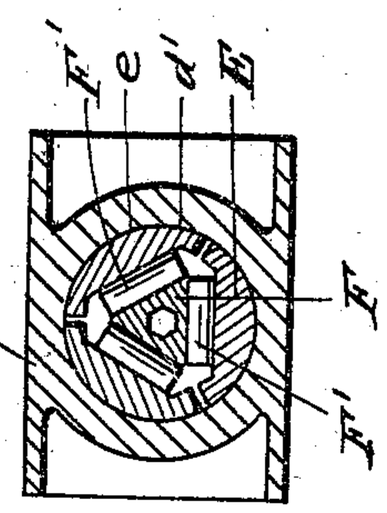


Fig. 5.



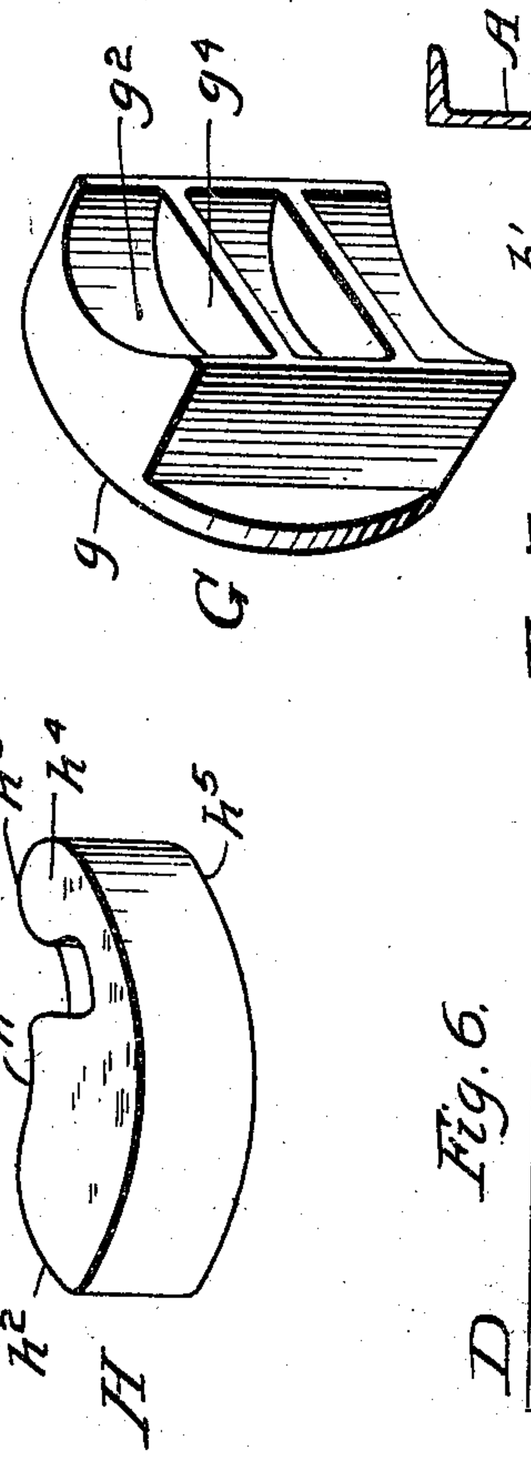


Fig. 4.

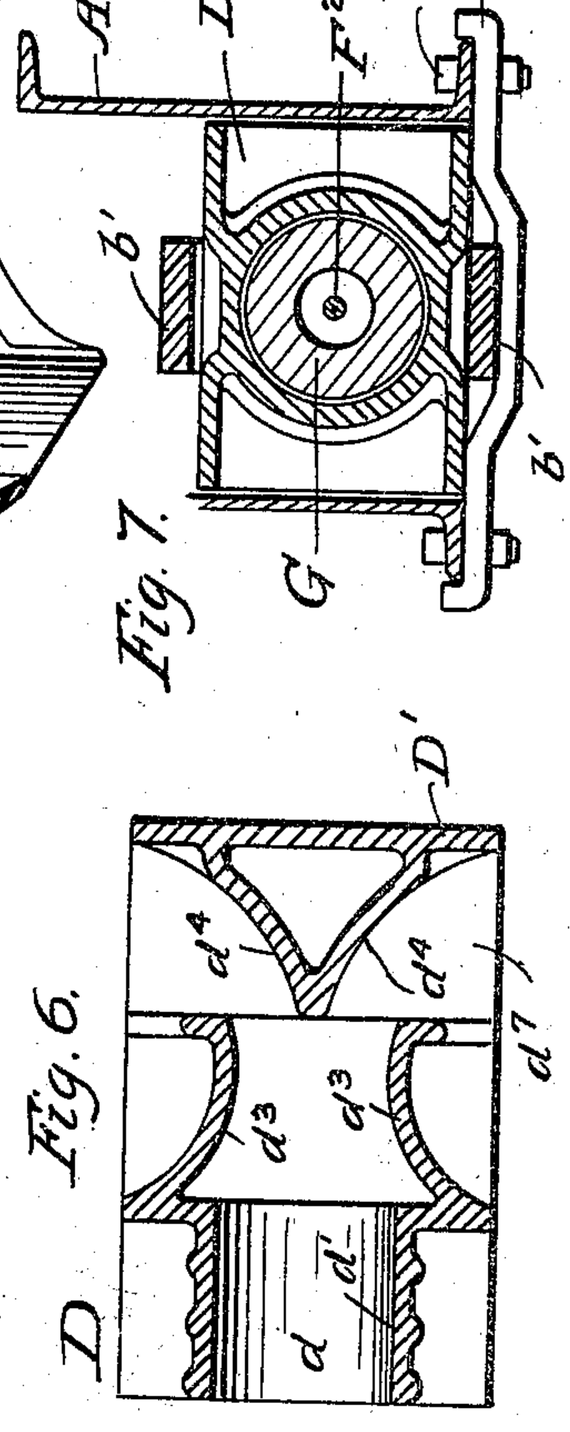


Fig. 8.

Fig. 3.

Fig. 7.

Fig. 6.

WITNESSES:

F. B. Townsend.

Pearl Abrams.

INVENTOR

John F. O'Connor

BY Munday, Evarts, Adcock & Clarke

his ATTORNEYS

UNITED STATES PATENT OFFICE.

JOHN F. O'CONNOR, OF CHICAGO, ILLINOIS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO WILLIAM H. MINER, OF CHICAGO, ILLINOIS.

FRICTION DRAFT-RIGGING.

981,675. Specification of Letters Patent. **Patented Jan. 17, 1911.**

Application filed October 18, 1909. Serial No. 523,252.

To all whom it may concern:

Be it known that I, JOHN F. O'CONNOR, 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, of which the following is a specification.

My invention relates to improvements in friction draft rigging 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 and described and more particularly specified in the claims.

In the accompanying drawing forming a part of this specification, Figure 1 is a plan view, partly in horizontal section on line 1—1 of Fig. 2, of a friction draft rigging embodying my invention. Fig. 2 is a side elevation, partly in section, on line 2—2 of Fig. 1. Fig. 3 is a detail perspective view of one of the pressure transferring members. Fig. 4 is a detail perspective view of the bearing block. Fig. 5 is a detail perspective view of one of the transversely movable followers. Fig. 6 is a detail view, partly in section, on lines 6—6 of Fig. 2 of the longitudinally movable friction shell and guide box. Fig. 7 is a section on line 7—7 of Fig. 1. Fig. 8 is a detail section of the friction shell on line 8—8 of Fig. 1.

In the drawing, A represent the draft sills, center sills or frame members of the car to which the draft rigging is applied, A^1 the front sill, A^2 the channel plate connecting the front and center sills, A^3 the carry-iron and A^4 the buffer block, A^5 A^5 the draft lugs or stops secured to the draft sills and against which the followers or movable members of the draft rigging abut and A^6 the removable guide or tie-plate secured to the center sills by bolts A^7 and upon which the draft rigging is supported and reciprocates.

B is the draw-bar of the coupler and B^1 a draft yoke secured thereto by rivets b in the usual manner.

C is the front follower, D the longitudinally movable friction shell and guide box, E segmental friction shoes within the friction shell, preferably three in number, F the wedge, F^1 anti-friction rollers between the wedge and friction shoes, G a movable bearing block against which the friction shoes abut, H H pressure transferring members, K transversely movable followers, L L^1 transversely arranged springs, M M inner transversely and longitudinally movable spring seats interposed between the inner ends of the springs and the followers K, N the outer spring seats or cap plates and P a longitudinally movable connecting rod for the springs.

The longitudinally movable friction shell and guide box D is exteriorly of a general rectangular shape and fits between and is guided longitudinally by the draft sills A A, and also fits between the upper and lower members b^1 b^1 of the draft yoke B. It has a central friction portion or shell d, having an internal, preferably cylindric, friction face d^1 with which the external friction faces e of the segmental friction shoes E are in sliding frictional engagement. The longitudinally movable friction shell and guide box D is also provided at its rear portion with longitudinal slots or chambers d^2 to receive the connecting rod P and the thimbles or hollow stems m of the inner spring seats M. The longitudinally movable friction shell and guide box D is also provided with integral curved guides d^3 d^4 for engagement with the curved faces h h^1 of the pressure transferring blocks or members H and thus transferring the longitudinal pressure of the draw-bar and draft yoke into a transverse one against the transversely arranged springs L and the interposed followers K and inner spring seats M. At its rear end d^5 the friction shell and guide box D has right angle faces or shoulders D^1 for engagement with the rear stops or draft lugs A^5.

The segmental and longitudinally movable friction shoes E have inner inclined or wedging faces e^1 and shoulders e^2 for coöperation with the corresponding inclined or wedge faces f and shoulders f^1 of the wedge F and interposed anti-friction rollers F^1.

The wedge F is preferably pyramidal or three faced, its faces corresponding in number to the number of the segmental friction shoes E and it is interposed between the front follower C and the friction shoes E. A longitudinal connecting rod F^2 extends between the wedge F and the shell and guide box D, the head f^2 of the connecting rod F^2 fitting in a suitable recess f^3 in the wedge F and its threaded nut f^4 abutting against the transverse web d^6 of the shell

and guide box D. This connecting rod serves to hold the wedge F, friction shoes E, pressure block G, pressure transfer blocks H, all assembled in coöperative relation to each other within the friction shell and guide box.

The pressure or bearing block G has a flat front end face g to bear against the rear end faces e^3 of the friction shoes E, and also preferably a hub or flange g^1 fitting within the friction shoes E. This bearing block G also has at its rear end curved bearing faces g^2 to engage and bear against the curved front ends h^2 of the pressure transferring blocks H and thus cause the transfer blocks H and bearing block G to transfer the longitudinal pressure of the draw-bar and draft yoke into a transverse pressure against the transversely arranged springs L L^1, said parts acting in conjunction with the curved guides d^3 d^4 of the shell and guide box D.

The pressure transferring blocks or members H are preferably four in number and fit between and are guided by the curved guides d^3 d^4 of the friction shell and guide box D. The same are preferably of a curved shape, substantially as shown in Fig. 3, and each has a convexly curved face h, concave face h^1 and curved face h^2 for engagement with the bearing block G, and a knuckle or pivot member h^3 at its rear end for engagement with the curved pivot socket K^1 of the follower K and flat upper and lower faces h^4 h^5 for engagement with the webs or shoulders g^4 of the bearing block G and K^2 of the follower K.

The transversely and longitudinally movable followers K are preferably two in number, and are arranged upright within suitable recesses or chambers d^7 in the fri tion shell and guide box D, one on each side of the draft yoke, and each has a central hole K^3 through which the connecting rod P extends so that the upper and lower transfer blocks or knuckles H on one side of the draft yoke may properly engage the follower K, one block H above and one below the connecting rod P.

The transversely arranged springs L L^1 are ordinary coiled springs, the smaller one nesting within the larger. The inner pair of spring seats or caps M against which the inner ends of the springs L L^1, L L^1 bear have thimbles or sleeves m which surround the connecting rod P and extend through guide slots a in the draft sills A to permit of the necessary longitudinal movement of the rod P and springs L L^1. The outer spring seats or caps M against which the outer ends of the springs bear are securely fixed in position on the connecting rod P by nuts p and keys or cotters p^1. The transversely acting and longitudinally movable sprihgs L L^1 and their connecting rod P have a less longitudinal movement than that of the friction shell and guide box D. The longitudinal slot d^2 in the member D provides for this differential longitudinal movement of these parts while the longitudinal slots a in the draft sills A provide for the longitudinal movement of the springs and their connecting rod and spring seats.

In operation, in buffing, the longitudinal movement and pressure of the draw-bar is transferred by the coöperating members G, H, D and K into a transverse pressure against the transversely arranged springs L L^1, the friction shell and guide box D being held stationary by the rear stops while the friction shoes slide in respect to the friction shell. In pulling, the operation is the same but the reverse, the front follower, wedge and friction shoes being held stationary by the front stops while the friction shell and guide box D move forward with the draw-bar and draft yoke, the transversely arranged spring and connecting rod having also a diminished forward longitudinal movement.

The guides d^3 d^4 and d^3 d^4 on the friction shell and guide box D are concentric circular curves and may be arranged to produce any desired proportional transverse movement of the followers K in respect to the longitudinal movement of the draw-bar. This enables me with a given spring of standard make or extent of compression to have any desired extent of longitudinal movement of the draw-bar. Preferably as illustrated in the drawing, with a two inch movement or compression of the spring, a three inch movement of the draw-bar is provided for. And by my invention also during the first half of the longitudinal movement of the draw-bar, the transverse or compressive movement of the springs is materially less than half of the total movement the springs provide for; so that during the draw-bar movement there is a constantly increasing relative spring movement. This increases the cushioning efficiency of the draft rigging as a whole, and also provides for proper cushioning action under light or service strains on the draw-bar.

I claim:—

1. In a friction draft rigging, the combination with the draw-bar, draft yoke, draft-lugs and draft sills having longitudinal guide slots therein, of a combined longitudinally movable friction shell and guide box having curved guides for pressure transfer blocks, longitudinally movable friction shoes within the friction shell, a wedge, a bearing block engaging the friction shoes and having curved bearing faces at its rear end, curved faced pressure transfer blocks engaging said bearing block, transversely and longitudinally movable followers engaging said pressure transfer blocks, transversely arranged and acting and longitu-

dinally movable springs, and a connecting rod and seats for said springs, the inner seats for the springs engaging the followers and having thimbles extending through the slots in said draft sills, substantially as specified.

2. In a friction draft rigging, the combination with draft sills having longitudinal slots therein, draft lugs secured thereto, draw-bar and draft yoke, of a longitudinally movable friction shell, segmental friction shoes and wedge within the shell, transversely acting and longitudinally movable springs, a connecting rod for said springs extending through said slots in said draft sills, an inner pair of spring seats having thimbles surrounding said connecting rod and extending through said slots in the draft sills, transversely and longitudinally movable followers engaging said spring seats and through which said connecting rod extends, and pressure transferring means between the friction shoes and followers, substantially as specified.

3. In a friction draft rigging, the combination with draft sills having longitudinal slots therein, draft lugs secured thereto, draw-bar and draft yoke, of a longitudinally movable friction shell, segmental friction shoes and wedge within the shell, transversely acting and longitudinally movable springs, a connecting rod for said springs extending through said slots in said draft sills, an inner pair of spring seats having thimbles surrounding said connecting rod and extending through said slots in the draft sills, transversely and longitudinally movable followers engaging said spring seats and through which said connecting rod extends, a bearing block engaging the friction shoes and pressure transferring blocks between the bearing block and the followers, substantially as specified.

4. In a friction draft rigging, the combination with draft sills having longitudinal slots therein, draft lugs secured thereto, draw-bar and draft yoke, of a longitudinally movable friction shell, segmental friction shoes and wedge within the shell, transversely acting and longitudinally movable springs, a connecting rod for said springs extending through said slots in said draft sills, an inner pair of spring seats having thimbles surrounding said connecting rod and extending through said slots in the draft sills, transversely and longitudinally movable followers engaging said spring seats and through which said connecting rod extends, a bearing block engaging the friction shoes and pressure transferring blocks between the bearing block and the followers, said friction shell having curved guides for said pressure transferring blocks, substantially as specified.

5. In a friction draft rigging, the combination with slotted draft sills, of draft lugs secured thereto, a draw-bar and draft yoke, a longitudinally movable friction shell and guide box having curved guides, friction shoes within the friction shell, transversely arranged and longitudinally movable springs, a connecting rod extending through the slots in the draft sills, seats for the springs, followers acting against the inner seats of the springs, a pressure block having a curved rear face and pressure transferring members engaging said bearing blocks at their front ends and said followers at their rear ends, substantially as specified.

6. In a friction draft rigging, the combination with longitudinally arranged and acting friction members comprising a friction shell and friction shoes within the shell, of transversely arranged and acting and longitudinally movable springs, a connecting rod for said springs, inner movable seats for the springs and connecting means between the friction shoes and said inner seats for the springs, substantially as specified.

7. In a friction draft rigging, the combination with longitudinally arranged and acting friction members comprising a friction shell and friction shoes within the shell, of transversely arranged and acting and longitudinally movable springs, a connecting rod for said springs, inner movable seats for the springs and connecting means between the friction shoes and said inner seats for the springs, said connecting means comprising a plurality of curved pressure transferring blocks, substantially as specified.

8. In a friction draft rigging, the combination with longitudinally arranged and acting friction members comprising a friction shell and friction shoes within the shell, of transversely arranged and acting and longitudinally movable springs, a connecting rod for said springs, inner movable seats for the springs and connecting means between the friction shoes and said inner seats for the springs, said connecting means comprising a plurality of curved pressure transferring blocks, and a bearing block having a curved face, substantially as specified.

9. In a friction draft rigging, the combination with longitudinally arranged and acting friction members comprising a friction shell and friction shoes within the shell, of transversely arranged and acting and longitudinally movable springs, a connecting rod for said springs, inner movable seats for the springs and connecting means between the friction shoes and said inner seats for the springs, said connecting means comprising a plurality of curved pressure transferring blocks, a bearing block having a curved face, and curved guides for said pressure transferring blocks, substantially as specified.

10. In a friction draft rigging, a longi-

tudinally movable combined friction shell and guide box having curved guides for pressure transferring blocks, in combination with curved pressure transferring blocks engaging said guides, a longitudinally movable bearing block engaging said pressure transferring blocks, and transversely and longitudinally movable followers engaging said pressure transferring blocks, substantially as specified.

11. In a friction draft rigging, a longitudinally movable combined friction shell and guide box having curved guides for pressure transferring blocks, in combination with curved pressure transferring blocks engaging said guides, a longitudinally movable bearing block engaging said pressure transferring blocks, transversely and longitudinally movable followers engaging said pressure transferring blocks, and friction shoes engaging said bearing block, and transversely acting and longitudinally movable springs having seats acting against said followers, substantially as specified.

JOHN F. O'CONNOR.

Witnesses:
PEARL ABRAMS,
EDMUND ADCOCK.