No. 702,426. Patented June 17, 1902.

J. J. HENNESSEY.

COMBINED FRICTION AND DIRECT ACTING SPRING DRAFT RIGGING.

(Application filed Mar. 24, 1902.)

(No Model.) 3 Sheets—Sheet 1.

FIG. 1.

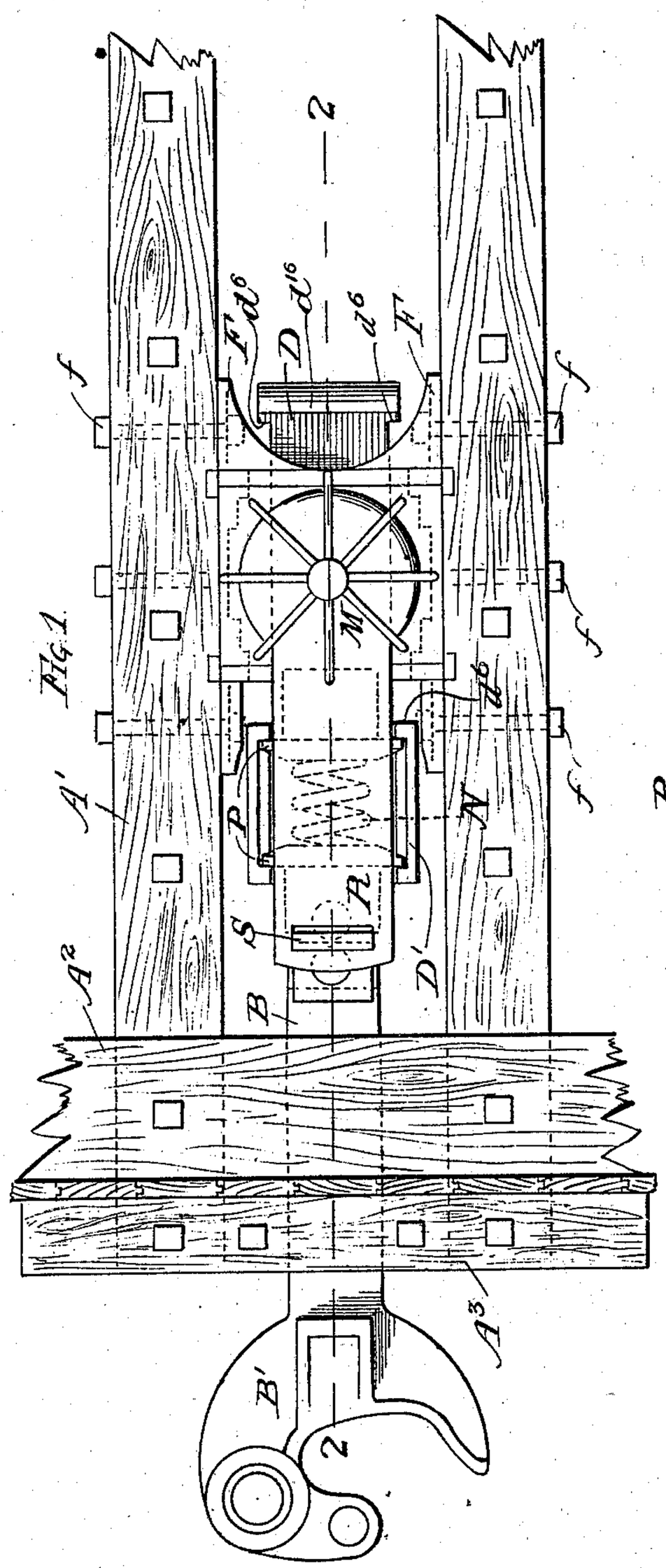
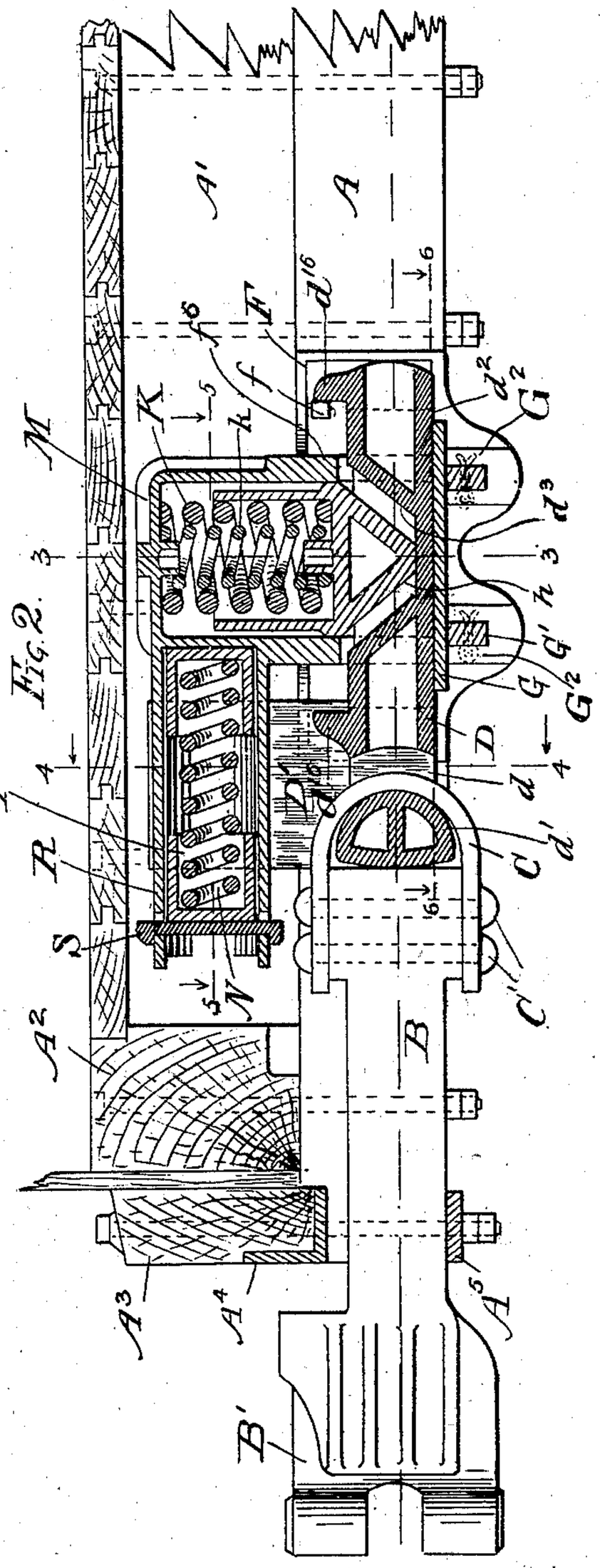


FIG. 2.



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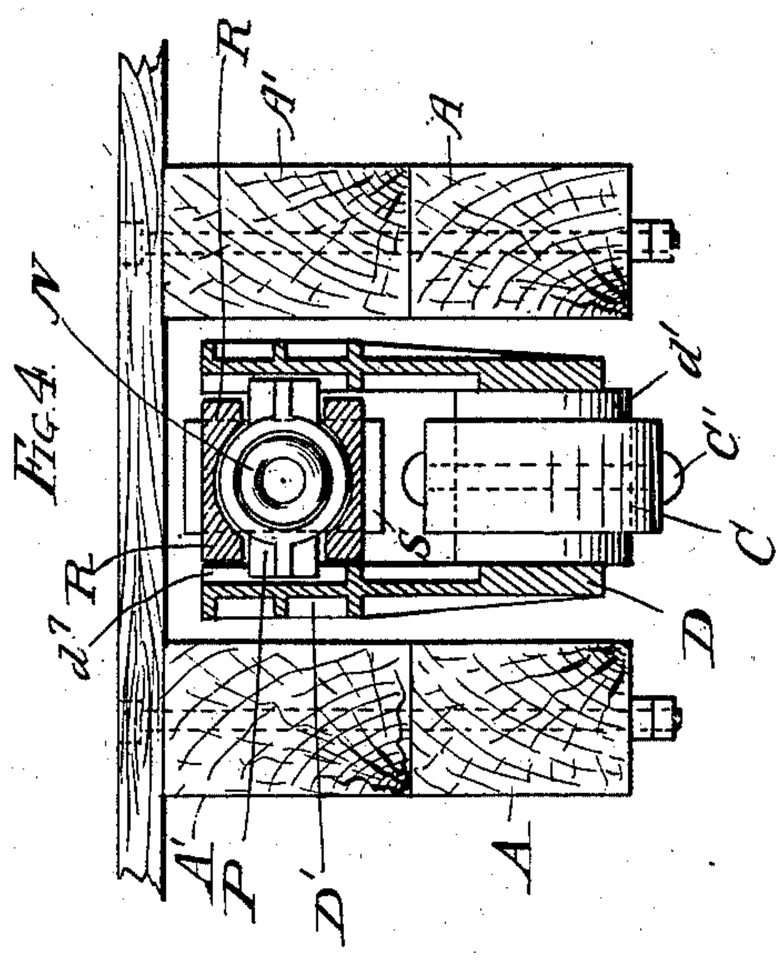

FIG. 4.

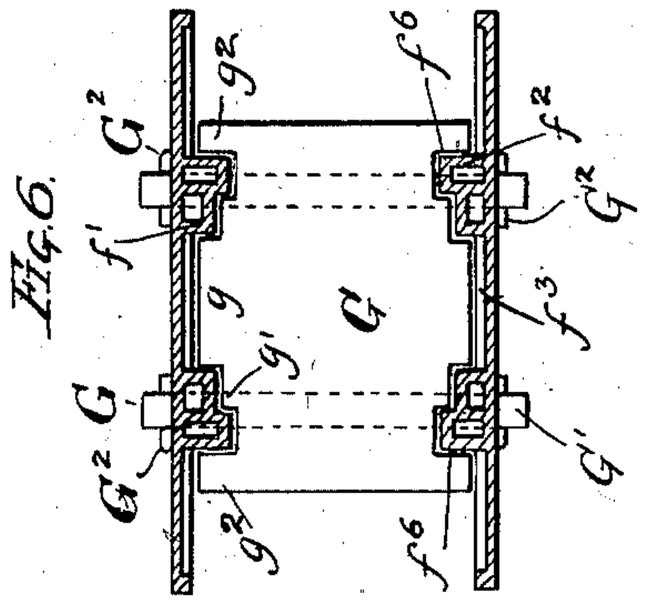

FIG. 6.

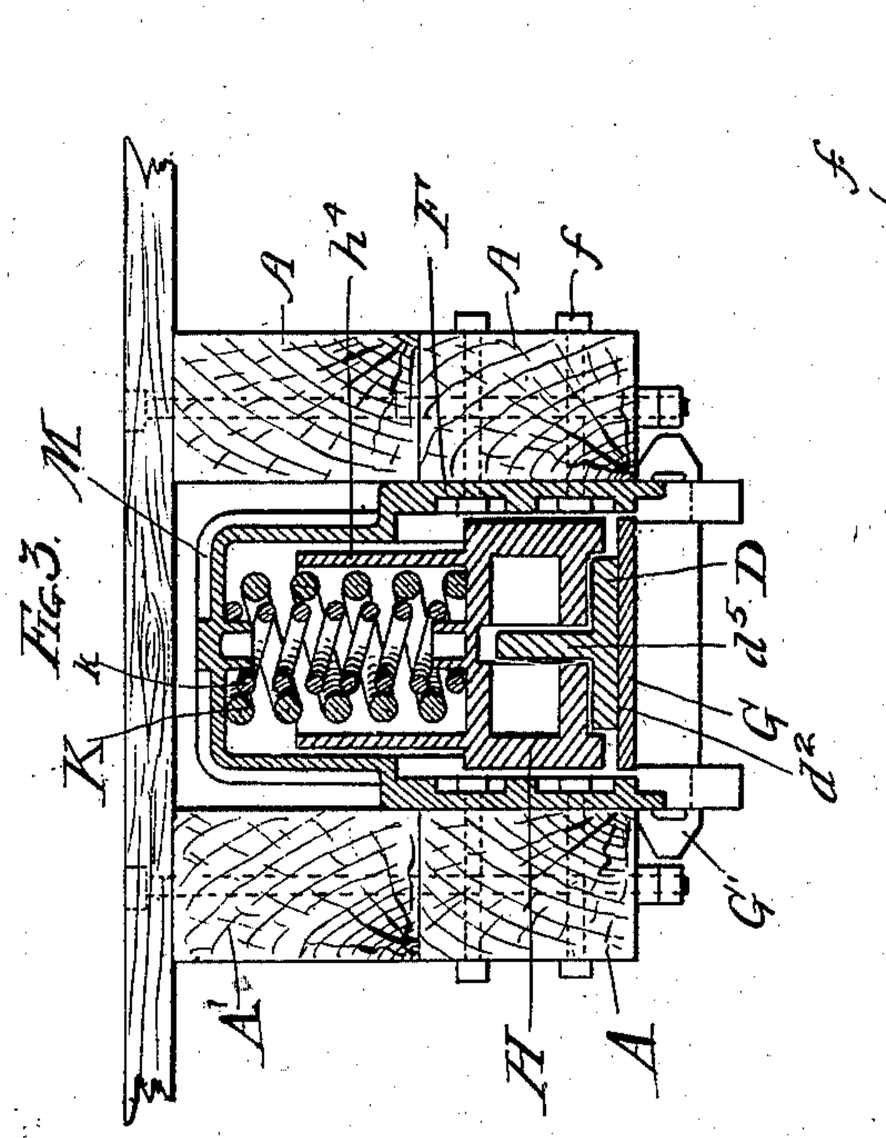

FIG. 3.

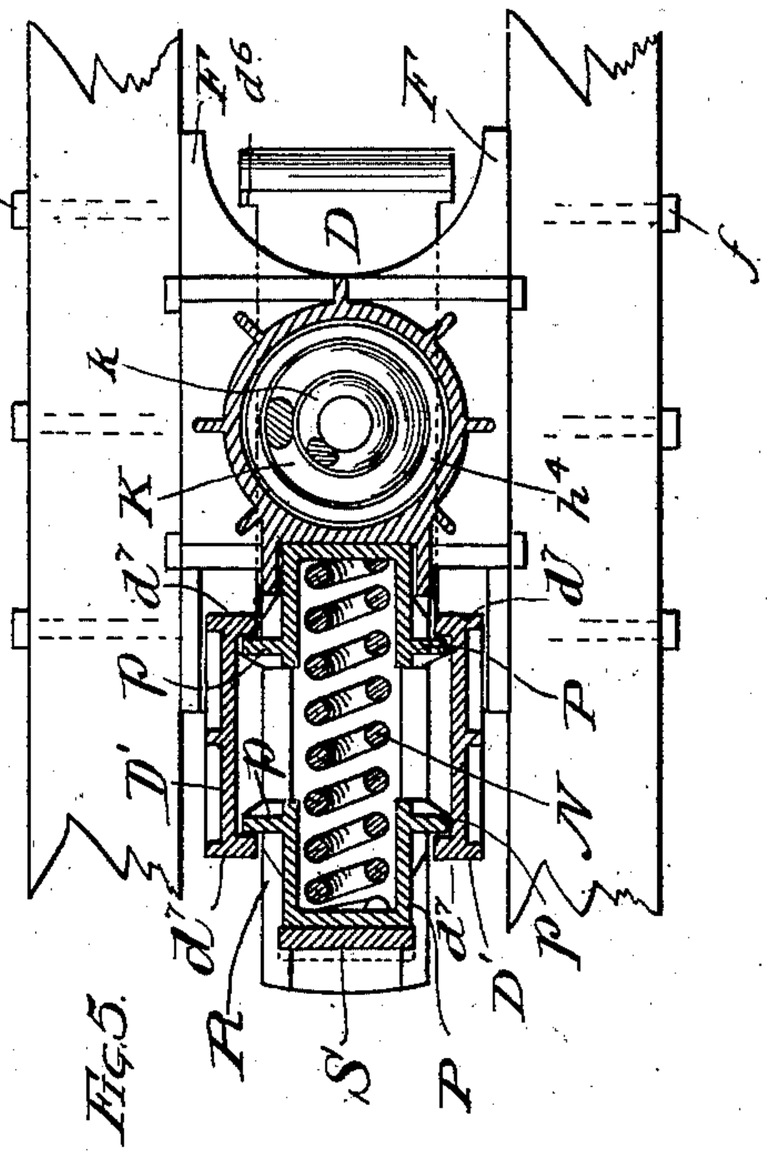

FIG. 5.

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(No Model.) 3 Sheets—Sheet 3.

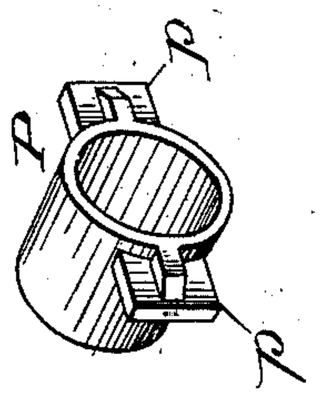

FIG. 8.

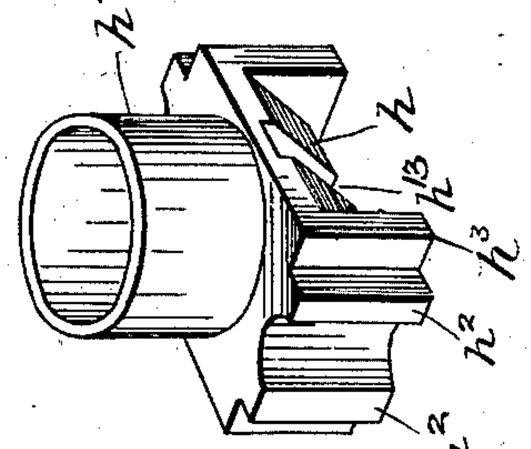

FIG. 9.

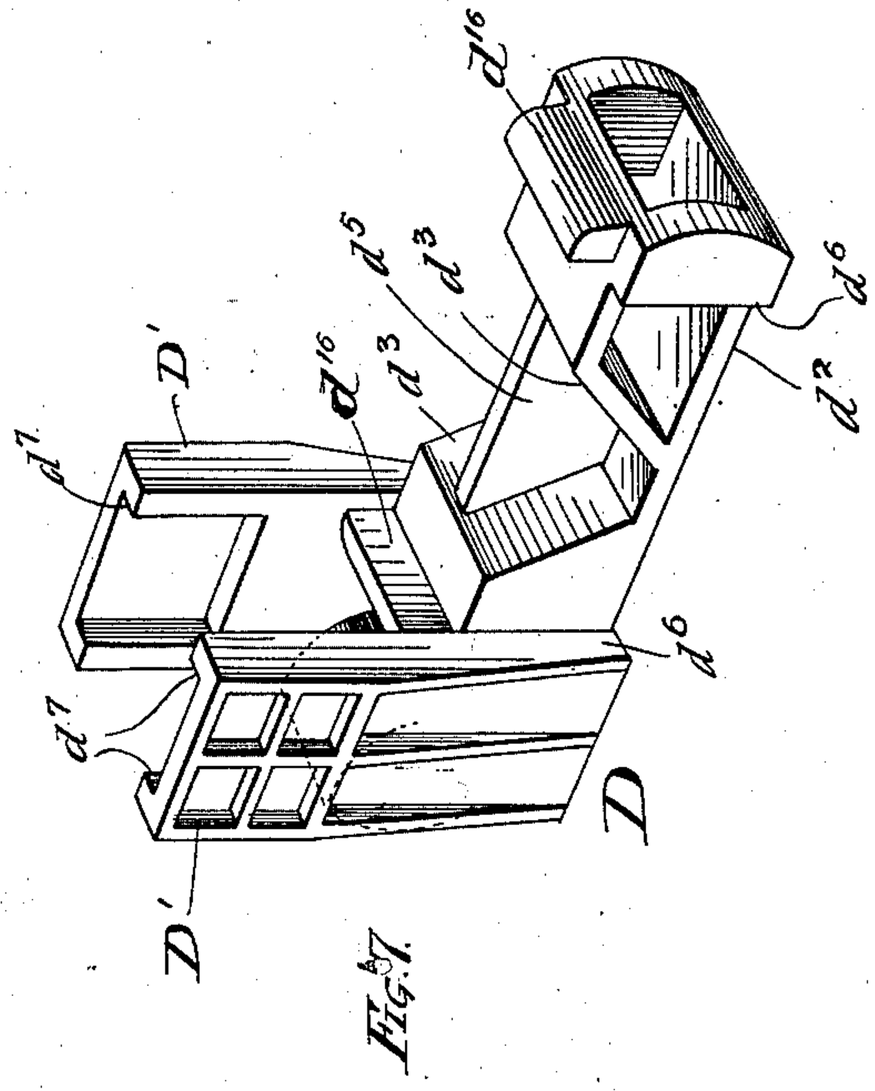

FIG. 7.

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JOHN J. HENNESSEY, OF MILWAUKEE, WISCONSIN.

COMBINED FRICTION AND DIRECT-ACTING SPRING DRAFT-RIGGING.

SPECIFICATION forming part of Letters Patent No. 702,426, dated June 17, 1902.

Application filed March 24, 1902. Serial No. 99,787. (No model.)

To all whom it may concern:

Be it known that I, JOHN J. HENNESSEY, 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 a Combined Friction and Direct-Acting Spring Draft-Rigging, of which the following is a specification.

My invention relates to friction spring draft-rigging.

The object of my invention is to provide a combined friction and direct-acting spring draft-rigging of a simple, strong, efficient, and durable construction in which the frictional resistance devices, as well as the direct-acting spring, shall all be between the draft-timbers or center sills and directly behind the draw-bar, and thus in the line of draft, and which will operate to properly cushion both light and violent blows or strains in both pulling and buffing.

My invention consists in the means I employ to accomplish this result—that is to say, it consists, in connection with the draw-bar of the coupler and the draft-timbers or center sills of the car and stationary side plates mounted between the draft-timbers or center sills and secured thereto, of a draw-bar extension or draft-iron in line with the draw-bar, having on one of its horizontal sides a straight friction-face and on its opposite side double-incline friction-faces, a stationary friction-plate in sliding frictional engagement with the straight friction-face of the draft-iron, a transversely-movable friction-block having corresponding double-incline friction-faces, a transversely-arranged spring acting against said friction-block and centrally pressing the draft-iron against said stationary friction-plate, a longitudinally-arranged direct-acting spring in the vertical plane of the draw-bar or draft-iron and preferably above the same, a pair of followers for said spring, preferably recessed or cup-shaped to receive the ends of the spring, a guide having stops for said followers, preferably secured to or made integral with the stationary side plates, and projections on the draft-iron for engaging the followers of the longitudinal spring under both pulling and buffing strains.

It further consists in so combining the parts that the direct-acting spring is partially compressed before the friction-block and transversely-arranged spring acting thereagainst is brought into action under both pulling and buffing strains.

It 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 plan view of a device embodying my invention. Fig. 2 is a central vertical longitudinal section on line 2 2 of Fig. 1. Figs. 3 and 4 are cross-sections on lines 3 3 and 4 4, respectively, of Fig. 2; and Figs. 5 and 6 are detail horizontal sections on lines 5 5 and 6 6, respectively, of Fig. 2; and Figs. 7, 8, and 9 are detail perspective views of parts hereinafter described.

Like letters of reference indicate like parts in the several figures.

In said drawings, A A represent the draft-timbers, A′ A′ the center sills, A^2 the front or cross sill, A^3 the buffer-block, A^4 the buffer-plate, and A^5 the carry-iron, of a railway-car, and B is the draw-bar of the coupler B′.

D is the sliding friction draw-bar extension or draft-iron directly in line with the draw-bar and connected thereto by a strap or clip C and bolts C′, the strap passing through the eye *d* of the draft-iron, the head *d′* of which is rounded to allow the necessary vertical play of the draw-bar. The loose fit of this connection also allows for the necessary lateral play of the draw-bar with respect to the draft-iron D. The draw-bar extension or draft-iron D has a straight friction surface or face d^2 on one of its horizontal sides, preferably its lower side.

F F are the side plates, fitting between the draft-timbers or center sills and securely attached thereto by bolts *f*. The side plates are preferably connected together or cast in one piece.

G is a stationary friction-plate directly behind the draw-bar and in the central line of draft, the friction-face d^2 of the draft-iron D being in sliding frictional engagement therewith. The stationary friction-plate G is removably supported on the side plates by cross-bars G′, having keys G^2. It is securely stopped

or anchored in position on the side plates by the interengaging shoulders or projections g g' g^2 and f' f^2 on the plate G and side plates F, respectively. The draft-iron D on its opposite side from the stationary friction-plate G has double-incline friction-faces d^3 d^3.

H is a transversely-movable friction-block having double-incline friction-faces h h, corresponding to and bearing against the double-incline friction-faces d^3 on the draft-iron. The friction-block H is rectangular in shape and has guide projections h^2 h^3, which fit in corresponding vertical guideways f^3 in the side plates F, formed by the vertical extension of the shoulders f' f^2. To strengthen the draft-iron, it is furnished with a central longitudinal web d^5, fitting in a corresponding groove or channel h^{13} in the friction-block H. The friction-block H also has a projecting rim or seat h^4 to receive and inclose the end of the transversely-arranged spring K, which acts against the friction-block H, and thus serves to centrally press the draft-iron D against the stationary friction-plate G, all being arranged directly behind the draw-bar and in the line of draft. Inside the main spring K a smaller supplemental spring k is arranged.

M is the seat, support, or abutment for the upper end of the springs K k, the same being preferably connected to or cast integral with the side plates F F. The draft-iron D is also provided with shoulders or stops d^6 d^{16} to engage corresponding shoulders or stops f^6 on the stationary frame or side plates F F.

N is a longitudinally-arranged direct-acting spring, the same being compressed under both pulling and buffing strains by a pair of longitudinally-movable followers P P, preferably cup-shaped or furnished with seats or recesses p to receive, guide, and support the ends of the spring N. These followers reciprocate longitudinally in a guide R, the same being preferably connected to or cast integral with the side plates or frame F F. The stationary guide R for the followers P of the longitudinally-arranged direct-acting spring N extends parallel to the draw-bar in the central line of draft, the same being directly above the draw-bar or its extension D. The followers P P are operated to compress the spring N by wings or projections D' D' on the draft-iron D, the same being preferably cast integral therewith and provided with shoulders d^7, which engage the ends p of the followers P P, the guide R for the followers having openings or slots for the ends of the followers to project through, as will be readily understood from Figs. 4 and 5 and 1 and 2.

The double inclines d^3 d^3 on the draft-iron are preferably more separated than the corresponding double inclines h h on the transversely-movable friction-block F, so that the direct-acting longitudinal spring N may be partially compressed in either pulling or buffing before the friction-block and transversely-arranged spring come into action. The longitudinal direct-acting spring thus softly and properly cushions the light blows or strains of switching or ordinary usage, while the transversely-arranged spring and friction-surfaces come subsequently into action to cushion and withstand the heavier shocks or blows.

In the drawings I have illustrated my invention as being applied to a car having both draft-timbers and center sills. It is, however, equally applicable for use upon cars where the draft-timbers are omitted or metal center sills are employed, the center sills in such case being somewhat deeper.

The front follower P abuts against a movable key S, inserted through the guide R. The rear follower abuts against the rear end of the guide R.

I claim—

1. In a railway draft-rigging, the combination with the draft-timbers or center sills, of side plates fitting between and secured thereto, a draw-bar, a draft-iron in line therewith and fitting between said side plates, a stationary friction-plate in line with the draw-bar and in sliding friction engagement with one of the horizontal sides of the draft-iron, double-incline friction-faces on the opposite sides of said draft-iron from said stationary friction-plate, a transversely-movable friction-block having double-incline friction-faces, a transversely-arranged spring acting against said friction-block and centrally pressing said draft-iron against said stationary friction-plate, a direct-acting longitudinally-arranged spring, longitudinally-movable followers bearing against said spring, a guide for said followers, and wings or projections on the draft-iron engaging said followers, substantially as specified.

2. In a railway draft-rigging, the combination with the draft-timbers or center sills, of side plates fitting between and secured thereto, a draw-bar, a draft-iron in line therewith and fitting between said side plates, a stationary friction-plate in line with the draw-bar and in sliding friction engagement with one of the horizontal sides of the draft-iron, double-incline friction-faces on the opposite side of said draft-iron from said stationary friction-plate, a transversely-movable friction-block having double-incline friction-faces, a transversely-arranged spring acting against said friction-block and centrally pressing said draft-iron against said stationary friction-plate, a direct-acting longitudinally-arranged spring, longitudinally-movable followers bearing against said spring, a guide for said followers, and wings or projections on the draft-iron engaging said followers, said followers partially compressing the longitudinal spring before the transversely-movable friction-block begins to compress the transversely-arranged spring, substantially as specified.

3. In a friction draft-rigging, the combination with a draw-bar and a draft-iron in line therewith, of a stationary friction-plate, double-incline friction-faces on the opposite side of the draft-iron, a transversely-movable block

having double-incline friction-faces, a transversely-arranged spring acting against said block and pressing the draft-iron against said stationary friction-plate, a direct-acting longitudinally-arranged spring, followers therefor, and connections for operating the followers, said draft-iron, friction-plate, friction-block and transversely-arranged spring being all directly behind the draw-bar and in the line of draft, substantially as specified.

4. In a friction draft-rigging, the combination with a draw-bar and a draft-iron in line therewith, of a stationary friction-plate, double-incline friction-faces on the opposite side of the draft-iron, a transversely-movable block having double-incline friction-faces, a transversely-arranged spring acting against said block and pressing the draft-iron against said stationary friction-plate, a direct-acting longitudinally-arranged spring, followers therefor, and connections for operating the followers, the transversely-arranged spring and friction-block coming subsequently into action, said draft-iron, friction-plate, friction-block and transversely-arranged spring being all directly behind the draw-bar and in the line of draft, substantially as specified.

5. In a friction draft-rigging, the combination with a draft-iron having double-incline friction-faces and a straight friction-face, of a stationary friction-plate, a transversely-movable friction-block, a spring acting against said block, a direct-acting longitudinally-arranged spring, followers therefor, a guide for the followers, and wings or projections on the draft-iron to operate the followers, substantially as specified.

6. In a friction draft-rigging, the combination with a draw-bar and draft-iron, of a direct-acting longitudinally-arranged spring above the same, followers therefor, connections for operating the followers, a transversely-movable friction-block, and a transversely-arranged spring acting against said block, substantially as specified.

7. In a friction draft-rigging, the combination with a draw-bar and draft-iron, of a direct-acting longitudinally-arranged spring above the same, followers therefor, connections for operating the followers, a transversely-movable friction-block, a transversely-arranged spring acting against said block, and a stationary friction-plate against which the transverse spring presses the draft-iron, substantially as specified.

8. In a friction draft-rigging, the combination with the draw-bar and a draft-iron connected therewith, of side plates, a stationary friction-plate, a transversely-movable friction-block having double inclines, a transversely-arranged spring acting against said block, a longitudinally-arranged spring, followers therefor, a guide for said followers, and projections or wings on the draft-iron for operating the followers, substantially as specified.

9. In a friction draft-rigging, the combination with a frame or side plates, having a longitudinal guide for longitudinally-movable followers, and a transverse guide for a transversely-movable friction-block, of a draft-iron having double inclines for operating the transversely-movable block, and projections for operating the longitudinally-movable followers, substantially as specified.

10. In a friction draft-rigging, the combination with a frame or side plate, having a longitudinally-extending guide for longitudinally-movable followers, and a transverse guide for a transversely-movable friction-block, of a draft-iron having double inclines for operating the transversely-movable block, projections for operating the longitudinally-movable followers, a transversely-movable block having double inclines, longitudinally-movable followers, a transversely-arranged spring, and a longitudinally-arranged spring, substantially as specified.

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