No. 719,949. PATENTED FEB. 3, 1903.

J. H. McCORMICK.

DRAW GEAR AND BUFFING APPARATUS.

APPLICATION FILED FEB. 28, 1902.

NO MODEL. 2 SHEETS—SHEET 1.

FIG. 1

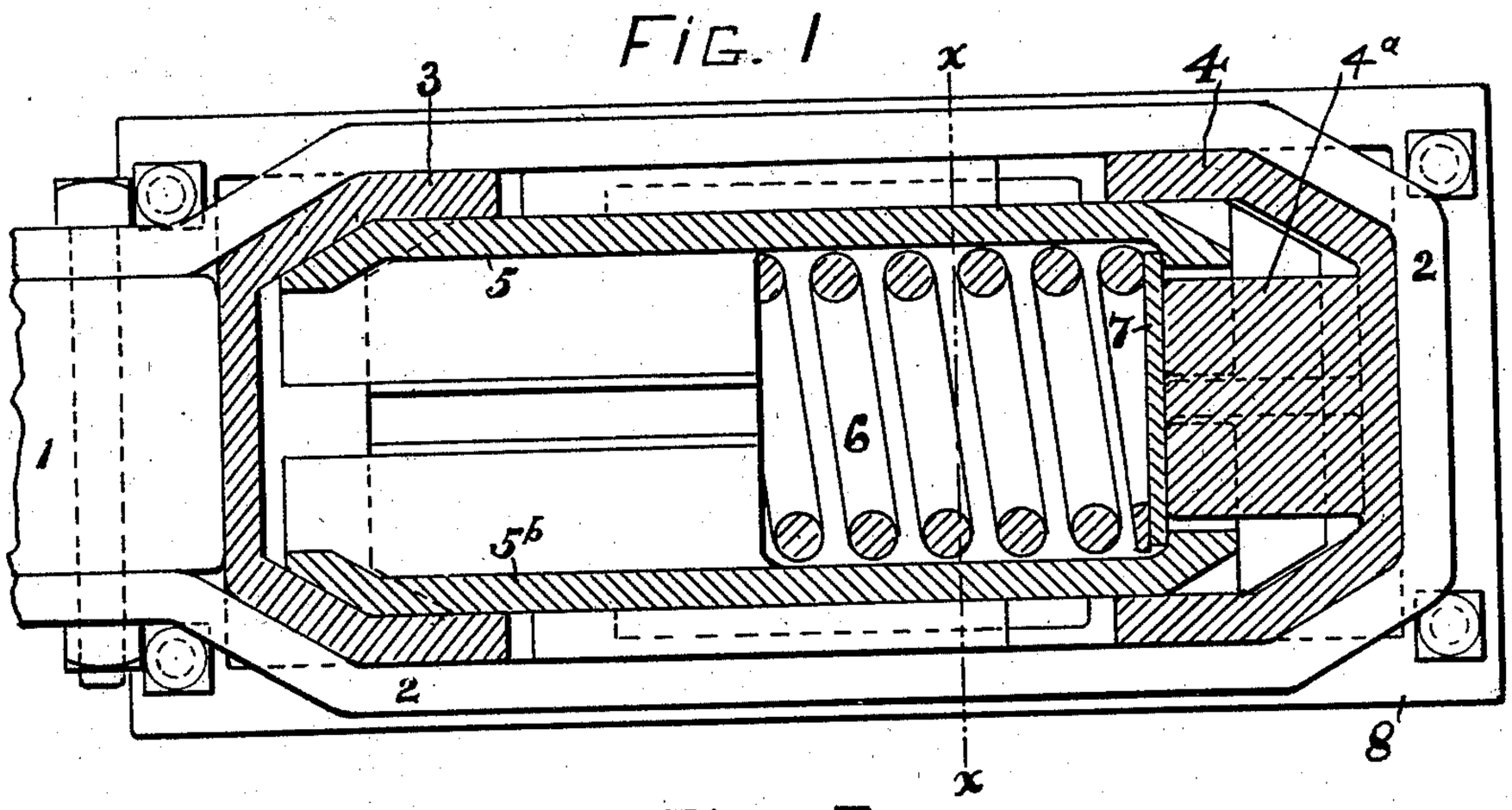
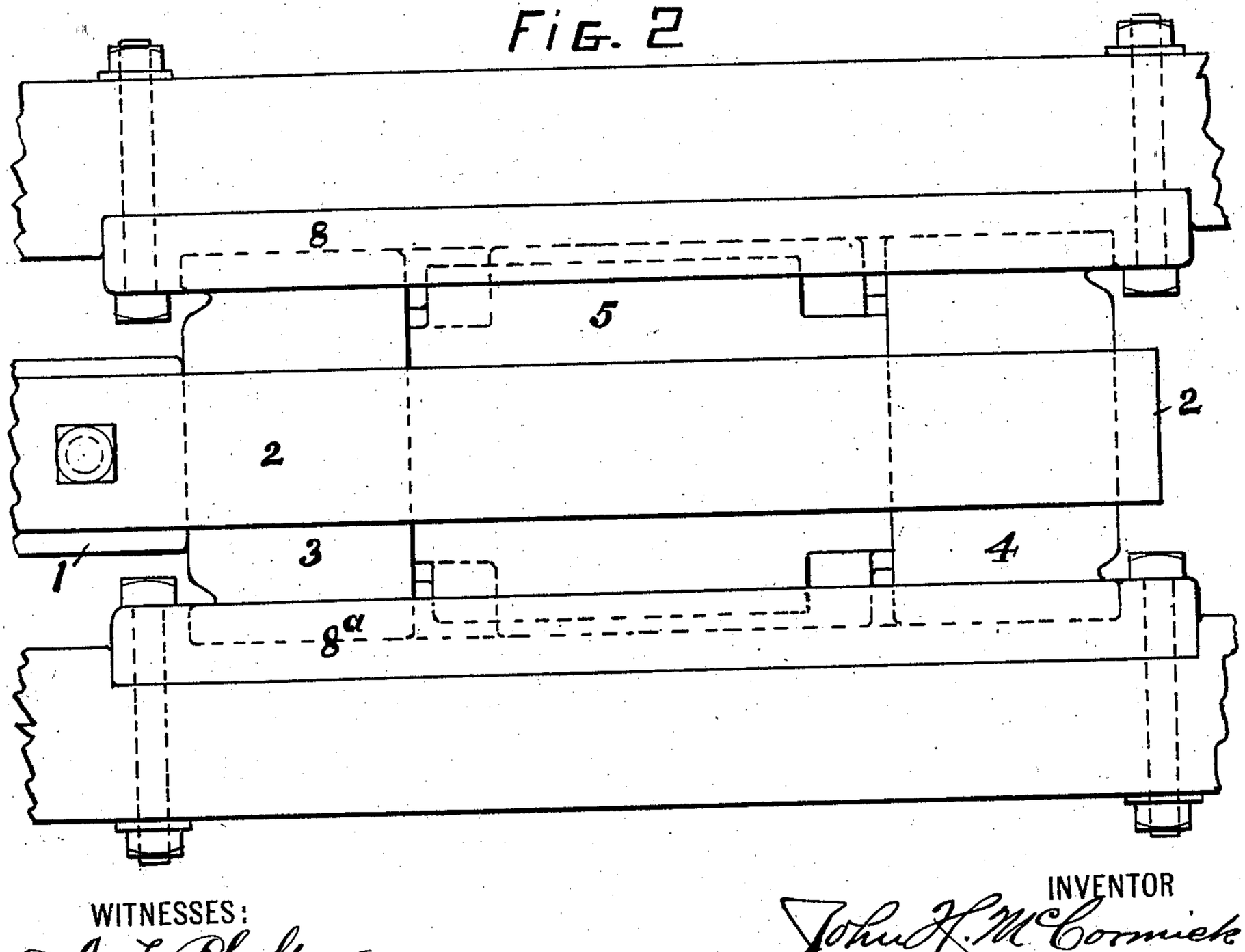


FIG. 2



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NO MODEL. 2 SHEETS—SHEET 2.

FIG. 3

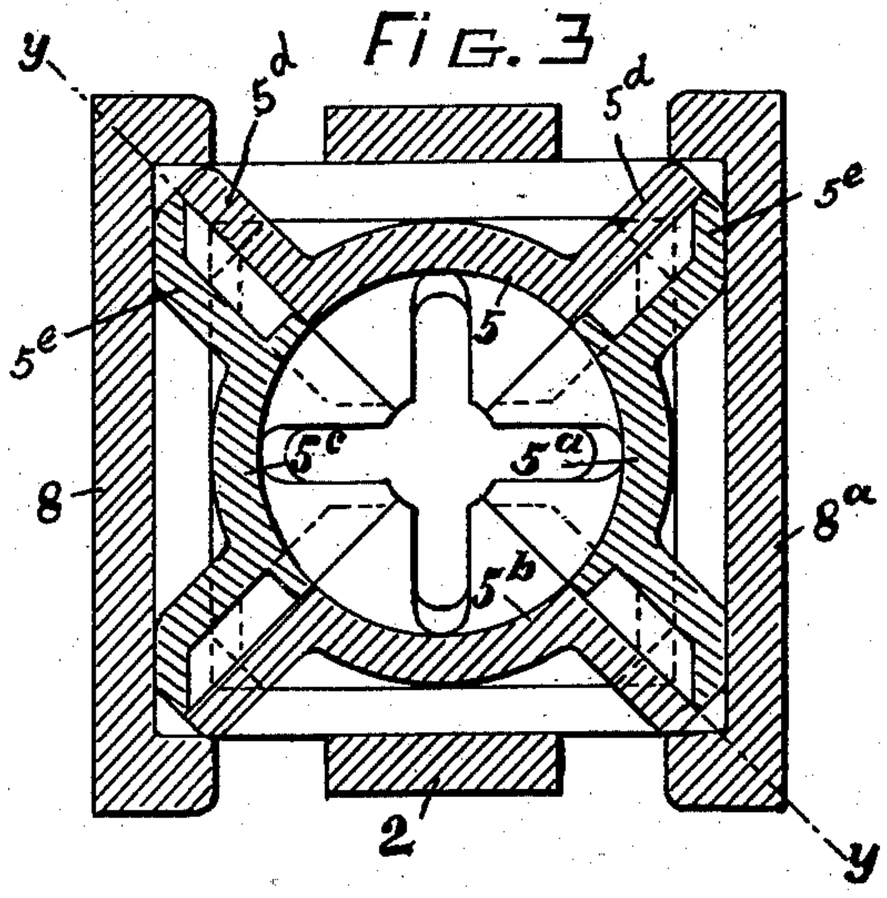


FIG. 4

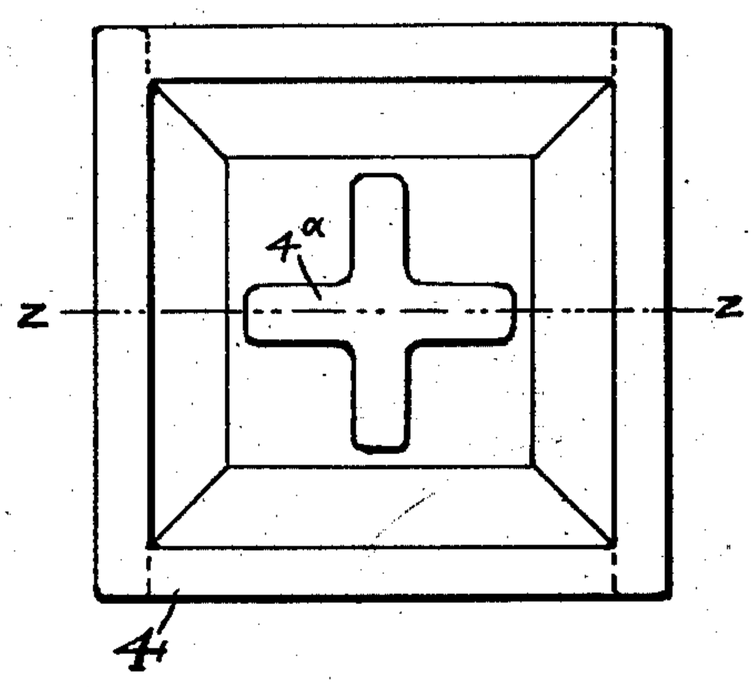


FIG. 5

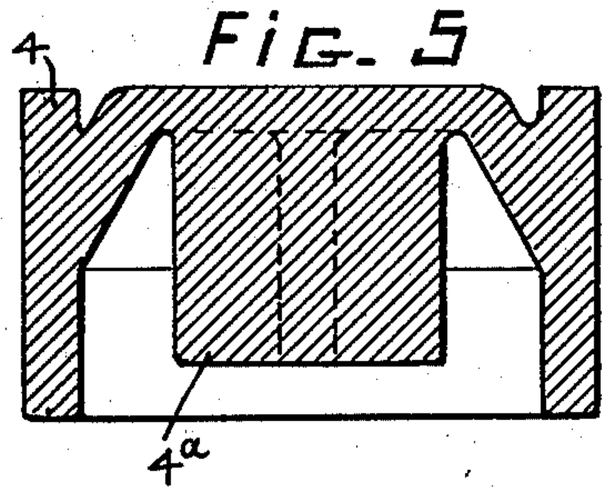
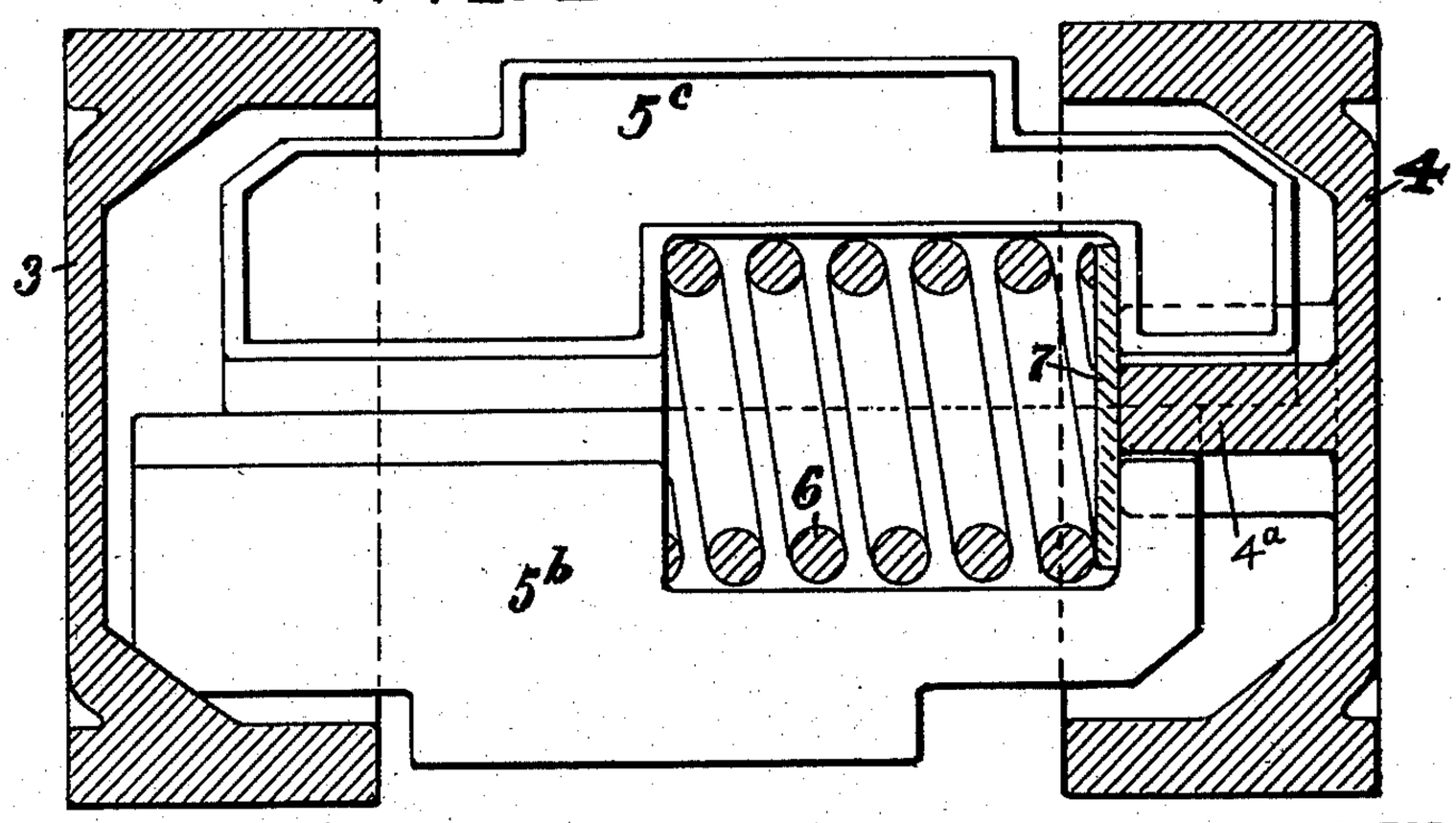


FIG. 6



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JOHN H. McCORMICK, OF COLUMBUS, OHIO.

DRAW-GEAR AND BUFFING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 719,949, dated February 3, 1903.

Application filed February 28, 1902. Serial No. 96,060. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. McCORMICK, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented a certain new and useful Improvement in Draw-Gear and Buffing Apparatus, of which the following is a specification.

My invention relates to that class or type of draw-gear and buffing apparatus in which frictional resistance is employed in connection with a resisting-spring to reduce shocks and prevent rebound that result from heavy bodies, such as cars, meeting in violent contact with each other.

The object of my invention is to provide a combined draw-gear and buffing apparatus of improved construction that will have increased efficiency and will have embodied in it the elements of simplicity, strength, durability, and reduced cost of manufacture, as well as being easily adaptable to all existing constructions in cars.

My invention consists in the various constructions and combinations of parts hereinafter described, and more fully set forth in the claims.

These objects I accomplish in the manner illustrated in the accompanying drawings, in which—

Figure 1 is a longitudinal vertical section through the center of the draw-gear and buffing apparatus, showing the relative normal positions of the parts, the yoke-strap and the end of the draw-bar being shown in full. Fig. 2 is a plan view of the apparatus, showing how it is attached to the car-sills by means of the sill-plates. Fig. 3 is a transverse section of the apparatus, the yoke-strap, and the sill-plates on line *x x* of Fig. 1, the spring being omitted for the sake of clearness. Fig. 4 is an end view of the rear follower-plate. Fig. 5 is a horizontal section on line *z z* of Fig. 4; and Fig. 6 is a longitudinal diagonal section of the apparatus on the line *y y* of Fig. 3, showing the relative normal position of adjacent frictional plates.

Similar numerals refer to similar parts throughout the several views.

In the drawings, 1 represents the rear end of the draw-bar. Rigidly bolted to the draw-bar 1 is the usual yoke-strap 2. Bearing against the end of the draw-bar 1 and resting top and bottom against the yoke-strap 2 is the front follower-plate 3. Bearing against the rear end of the yoke-strap 2 is the rear follower-plate 4. The follower-plates 3 and 4 are preferably made rectangular and have a flange on each edge, which is beveled at the base on the inside. The flanges on the follower-plates 3 and 4 form bearings for the ends of movable segments 5, 5^a, 5^b, and 5^c, the ends of which are beveled on the outside to conform to the bevel on the flanges of the follower-plates 3 and 4. The segments 5, 5^a, 5^b, and 5^c each have radial longitudinal flanges 5^d and 5^e, that increase their strength and at the same time provide additional bearing or frictional surfaces. It will be observed that the bearing-surfaces of the flanges 5^e are cut away or hollowed out where they bear against the adjacent flanges 5^d, the recesses thus formed being extended partially into the casing formed by the segments. This is for the purpose of providing better frictional surfaces, as the spaces that are shown as hollow on the frictional surfaces of the segment-flanges 5^d and 5^e are to be filled with composition or wood filling. Each of the movable segments 5, 5^a, 5^b, and 5^c have two inwardly-projecting portions which serve as end bearings for the spring 6. The longitudinal location of the projections on the segments, in connection with the spring 6, which is located between them, holds the segments 5, 5^a, 5^b, and 5^c in their normal positions. Between the end of the spring 6 and the inward projections on the segments 5, 5^a, 5^b, and 5^c is a flat plate 7, which also bears against a central projection 4^a on the rear follower-plate 4. By this arrangement the rear follower-plate 4 has a direct bearing against the spring 6 and is held from contact with the rear ends of the segments when in normal position. The sill-plates 8 and 8^a, which are securely bolted to the draft-sills of the car, as shown in the drawings, are made with flanges on each edge, which serve as guides and bearings for the follower-plates 3 and 4. (See Fig. 3.)

The operation of the parts thus described is as follows: When used as draw-gear, the action is a draft or pulling operation on the draw-bar, and the draw-bar 1, the yoke-strap 2, which is bolted to it, and the rear follower-

plate 4 are moved forward against the resistance of the spring 6, one end of which bears against the rear follower-plate 4 by means of the central projection 4^a on the follower 4 and through the plate 7. The other end of the spring 6 bears on the inward projections of the segments 5, 5^a, 5^b, and 5^c, two of which, 5 and 5^b, bear against the flanges of the front follower-plate 3, which in turn bears against the flanges of the sill-plates 8 and 8^a. The first result of the pulling action on the draw-bar is to close up the space between the rear ends of the movable segments 5^a and 5^c and the follower-plate 4. This arrangement is desirable because it allows all slight movements of the draw-bar to be taken up by the resistance of the spring alone, thus saving wear on the frictional parts that are intended to absorb the heavier shocks. The next result of continued forward movement of the draw-bar is that the beveled rear end of the movable segments 5^a and 5^c on contacting with the beveled part of the flange on the follower 4 will be pressed forward longitudinally and at the same time be subjected to an inward pressure toward each other. The inward pressure on the segments 5^a and 5^c is resisted by the segments 5 and 5^b, which in turn are held from outward movement at their rear ends by the parallel portions of the flanges on the rear follower-plate 4. The resistance to longitudinal movement of the segments 5^a and 5^c comes from the friction that has been created between them and the adjacent segments 5 and 5^b by resistance of the spring 6, acting through the beveled ends of the movable segments and the beveled portions of the flanges on the follower-plates. The segments 5 and 5^b are held from longitudinal movement in a forward direction, as they bear directly against front follower-plate 3, but are subjected to an inward pressure, as their beveled ends bear against the bevels on the flanges of the follower-plate 3 and are resisted by the segments 5^a and 5^c, which in turn bear against the flanges on the follower-plate 3. Thus it is seen that the movable segments 5^a and 5^c receive an inward pressure at the rear end, which is resisted by the segments 5 and 5^b, while segments 5 and 5^b receive an inward pressure at their forward ends, which is resisted by segments 5^a and 5^c. By reference to Figs. 1 and 6 it is easily seen that pressure from either direction in pulling or buffing actions is transmitted only through the bevels on the flanges of the follower-plates to the bevels on the ends of the movable segments, and there can be no longitudinal movement of the segments 5, 5^a, 5^b, and 5^c unless accompanied by a clamping pressure on all the segments at both ends, which must result in frictional resistance to any longitudinal movement. A buffing or pushing action from the draw-bar will have exactly the same result as the draft or pulling action just described. The first pressure of the forward follower-plate 3 will clamp all the segments 5, 5^a, 5^b, and 5^c together, and they will all move backward until the spring 6 is compressed sufficiently to allow the bevel on the end of the segments 5^a and 5^c to contact with the bevels on the flange of the rear follower 4. In the buffing action the segments 5^a and 5^c now remain stationary, bearing against the rear follower-plate 4, and the segments 5 and 5^b are pushed backward longitudinally against the friction resistance created and the direct resistance of the spring 6, which in this case will bear against the inward projections on the segments 5 and 5^b. In both draft and buffing operations the return of the parts to normal position is by means of the spring 6 after the draft or buffing pressures have been reduced or cease to act. The spring in returning the parts must act through the bevels on the ends of the movable segments and the bevels on the flanges of the follower-plates. Any resistance that the draw-bar may offer will be increased by the frictional resistance that will be created between the movable segments. This feature of the draw-gear and buffing apparatus prevents the violent rebound or return of the parts.

It is obvious that the details can be varied considerable without departing from the spirit of the invention. For instance, more movable segments and more springs can be introduced, thus increasing the frictional surfaces and the capacity.

Having now fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a draw-gear and buffing apparatus, the combination of segmental longitudinally-movable parts that bear against each other to create friction, a compression-spring bearing against adjacent contacting segments to force them in opposite directions, and means for pressing the segments against each other, substantially as specified.

2. In a draw-gear and buffing apparatus, the combination of segmental parts bearing against each other and capable of movement longitudinally one toward the other, a spring inclosed by the segments, and means for clamping and pressing the segments together at both ends, substantially as specified.

3. In a draw-gear and buffing apparatus, the combination of longitudinally-movable contacting segments, a spring pressing adjacent segments in opposite directions, and a wedging device for creating friction between the segments, substantially as specified.

4. In a draw-gear and buffing apparatus, the combination of longitudinally-movable contacting segments, a follower-plate having a central projection, a spring inclosed by the segments, and bearing against the central projection on the follower-plate, and means for creating friction between the segments, substantially as specified.

5. In a draw-gear and buffing apparatus, the combination of longitudinally-movable contacting segments with beveled ends, fol-

lower-plates at each end having inside beveled flanges or projections and a spring inclosed by the segments and bearing at each end against central projections on the segments, substantially as and for the purpose specified.

6. In a draw-gear and buffing apparatus, the combination of longitudinally-movable contacting segments having central projections to serve as spring-bearings, a spring inclosed by the segments, a plate or disk between the end of the spring on one side and the central projections of the segments and the central projection of the follower-plate on the other side and means for creating friction between the segments, substantially as specified.

JOHN H. McCORMICK.

In presence of—
A. L. PHELPS,
W. L. MORROW.