S. GRIFFITH & J. S. PATTERSON.

Draft Apparatus for Cars.

No. 217.869. Patented July 29, 1879.

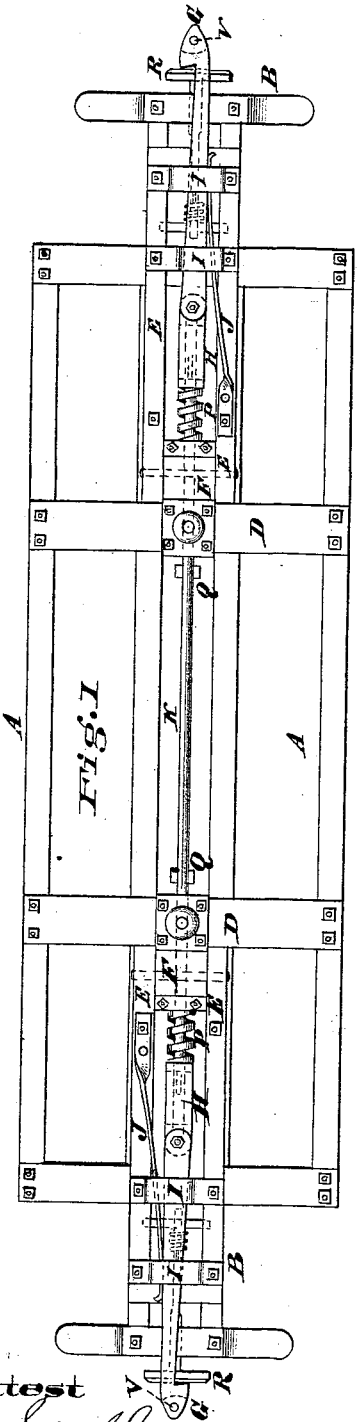

Fig: 1

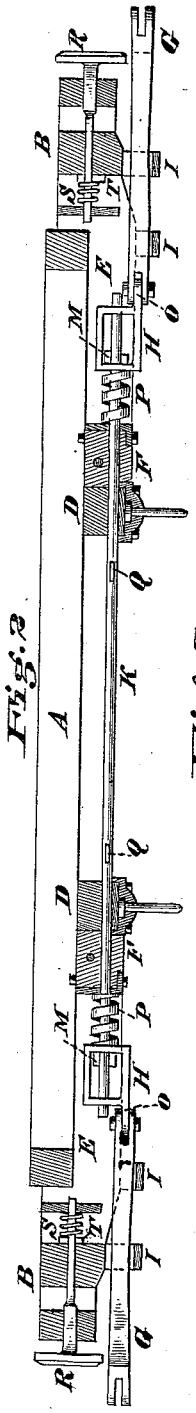

Fig: 2

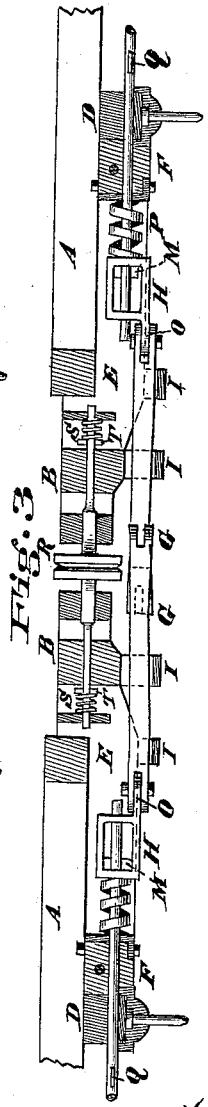

Fig: 3

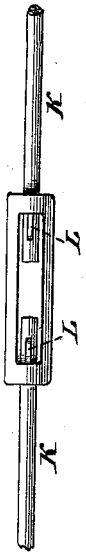

Fig: 4

Attest

Edgar Gross

John E. Jones

Inventors

Samuel Griffith and

John S. Patterson

By Hosea T. Ellsworth

Their Attys.

UNITED STATES PATENT OFFICE.

SAMUEL GRIFFITH AND JOHN S. PATTERSON, OF CINCINNATI, OHIO.

IMPROVEMENT IN DRAFT APPARATUS FOR CARS.

Specification forming part of Letters Patent No. **217,869**, dated July 29, 1879; application filed November 18, 1878.

To all whom it may concern:

Be it known that we, SAMUEL GRIFFITH and JOHN S. PATTERSON, both of Cincinnati, Hamilton county, and State of Ohio, have invented a new and Improved Draft Apparatus for Railroad-Cars; and we do hereby declare the following to be a full, clear, and exact description of the same, which will enable others skilled in the art to which our invention relates to make and use it, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is an inverted plan view of a railroad-car frame, showing the application of our improvements. Fig. 2 is a longitudinal section of the same. Fig. 3 shows the ends of two car-frames coupled together and the position of the buffers when the draw-bar is under draft. Fig. 4 shows a modification in the construction of the draft-rod.

Similar letters refer to similar parts.

In that class of railroad-car couplings known as the "hook-coupling" or "Miller coupling" the draft-hooks are separately attached to opposite ends of each car by a spring-connection for the purpose of relieving the car from sudden jars and shocks in starting, and to hold adjoining hooks engaged when the couplings are under tension after the cars are fully in motion.

Inasmuch as the hooks form draft-couplings only, separate buffers are required, which are generally located in the car-frame beneath the hooks, and are provided with springs, by which they are projected when out of contact with each other on adjoining cars.

In coupling, the proximate hooks of separate cars engage each other laterally, and their buffers are brought in contact, so as to slightly compress their springs. When the cars are at rest the draft-faces of the hooks are together and the buffers bear against each other; but when they are in motion the strain upon the hooks compresses their springs, particularly if the train is a heavy one, thereby lengthening the spaces between the cars and separating adjoining buffers beyond the limits of their respective springs, so that they no longer form elastic bearings, by which the train is steadied. If, therefore, the cars are stopped or their speed slackened, the buffers are brought in contact with a force beyond the capacity of the springs to resist, thereby subjecting the cars to sudden and violent shocks.

The hooks perform no buffing action whatever, but slip along each other when the buffers are in contact.

As the hooks of a car are disconnected from each other, the strain of draft tends to pull the car-timbers apart instead of pulling them together, as they ought properly to do.

Our invention has for its object to overcome these objections by combining with the hook-couplings and separate buffers a continuous spring draw-bar, by which the strain of draft is applied at the rear end of each car to throw its timbers into compression, and to draw and hold the buffers of adjoining cars constantly against each other to steady the train and take up the sudden shocks and jars when the cars come together.

In the accompanying drawings, A is the car-frame, of the usual construction, provided with the end buffer-platforms, B B, generally employed with this class of couplings. D D are the bolsters, carrying center-pins, by which the car is connected to the trucks.

The frame is strengthened and the bolsters supported to sustain, as far as possible, an equal share of the draft strain by means of supplemental sills E E, secured to the under side of the center sills at each end of the car, and extending from the bolsters to a point near the front end of the buffer-platforms, and by blocks or abutments F F, interposed between the center sills outside of and bearing against the bolsters.

G G are the coupling-hooks, pivoted at their rear ends, between the supplemental sills, to yokes H H, and extending forward under the buffer-platforms, so that the hook portions shall project somewhat beyond the same. They are held and guided in their movements by metal straps I I bolted across the supplemental sills, while side springs, J J, attached to the sills, bear with their free ends against the hooks laterally to hold them engaged upon adjoining cars.

K is the draft-bar, which may be made in one piece, as shown in Figs. 1, 2, and 3, or in two parts united at the center by a yoke and keys, L, as shown in Fig. 4, or by other suit-

able means. It extends through the bolsters and blocks F, between the center sills of the car-frame, but having no positive connection therewith, and its ends project into the yokes H of the coupling-hooks, from which they are prevented from escaping by keys M, driven into them within the yokes, such keys also serving to sustain the draft strain. The yokes slide freely upon the rod, and as they are out of line with the axes of the draft-hooks they are cast with a flange, O, at their lower outer corners, to which the hooks are pivoted. This connection admits of the position of the hooks under the buffer-platforms, and at the same time permits the draft-rod to be placed on a line above the hooks, so as to pass through the bolsters and blocks F.

P P are coiled springs mounted upon the ends of the draft-bar between the yokes and blocks, for the purpose of transmitting the strain of draft to the car-frame.

Q Q are additional keys driven through the draft-rod immediately behind the bolsters, for the purpose of preventing the rod from drawing out of the car-frame in case it should break between the bolsters; and R R are the buffers, having their shanks or stems inserted in the ends of the buffer-platforms, where they are surrounded by coiled springs S S, which exert their tension to project the buffers outward. These springs bear against two cross-bars in the platforms, and the shanks are prevented from pulling out by keys T T driven through them behind one or the other of the cross-bars.

When the coupling is in operation in a train of cars the draft strains in each car are applied to their rear ends through the rear springs of the draft-bars and the blocks F, while the tractive force of the engine is applied to all the leading cars through the draw-bars. By this means, instead of imparting tensile strain to the car-frames, they are subjected to compressive strains only; but these strains result mainly from the weight of the car and its load, because those cars of a train between the engine and last car are carried along by their draft-rods, to which the draft force is applied. Instead of drawing the cars apart, and thereby separating adjoining buffers, as would be the case if the coupling-hooks were separately attached to a car, the continuous draw-bars pull the cars toward each other, and consequently draw the buffers of adjoining cars together, so that they shall constantly bear against each other with a yielding pressure, and relieve the cars of sudden jars and shocks and steady the whole train when in motion.

For the purpose of employing the link-and-pin coupling when the draft-hooks are used with other cars having the link-coupling, the draft-hooks are provided with recessed ends, vertical pin-holes V, in the customary manner, and under such circumstances the springs of the draft-rods perform the function of buffing-springs in addition to that of draft-springs.

We do not claim, broadly, a spring draft-bar extending from end to end of a car; and neither do we claim, broadly, a pivoted spring draft-hook capable of lateral movement, as such features of themselves are not new.

Having thus described our invention, what we claim is—

In combination with the structure of a car, a spring-impelled draft-bar, K, extending from end to end of the car, the yokes H, connected with the draft-bar at each end, and capable of a sliding movement thereon, the springs P, arranged in rear of the yokes, and draft-hooks G, pivoted to the front ends of the yokes H, and capable of lateral movements when coupling, being guided by suitable supports I, all substantially as herein shown and described, and for the object specified.

In testimony of which invention we hereunto set our hands this 1st day of October, A. D. 1878.

SAMUEL GRIFFITH.
JOHN S. PATTERSON.

Witnesses:
L. M. HOSEA,
E. A. ELLSWORTH.