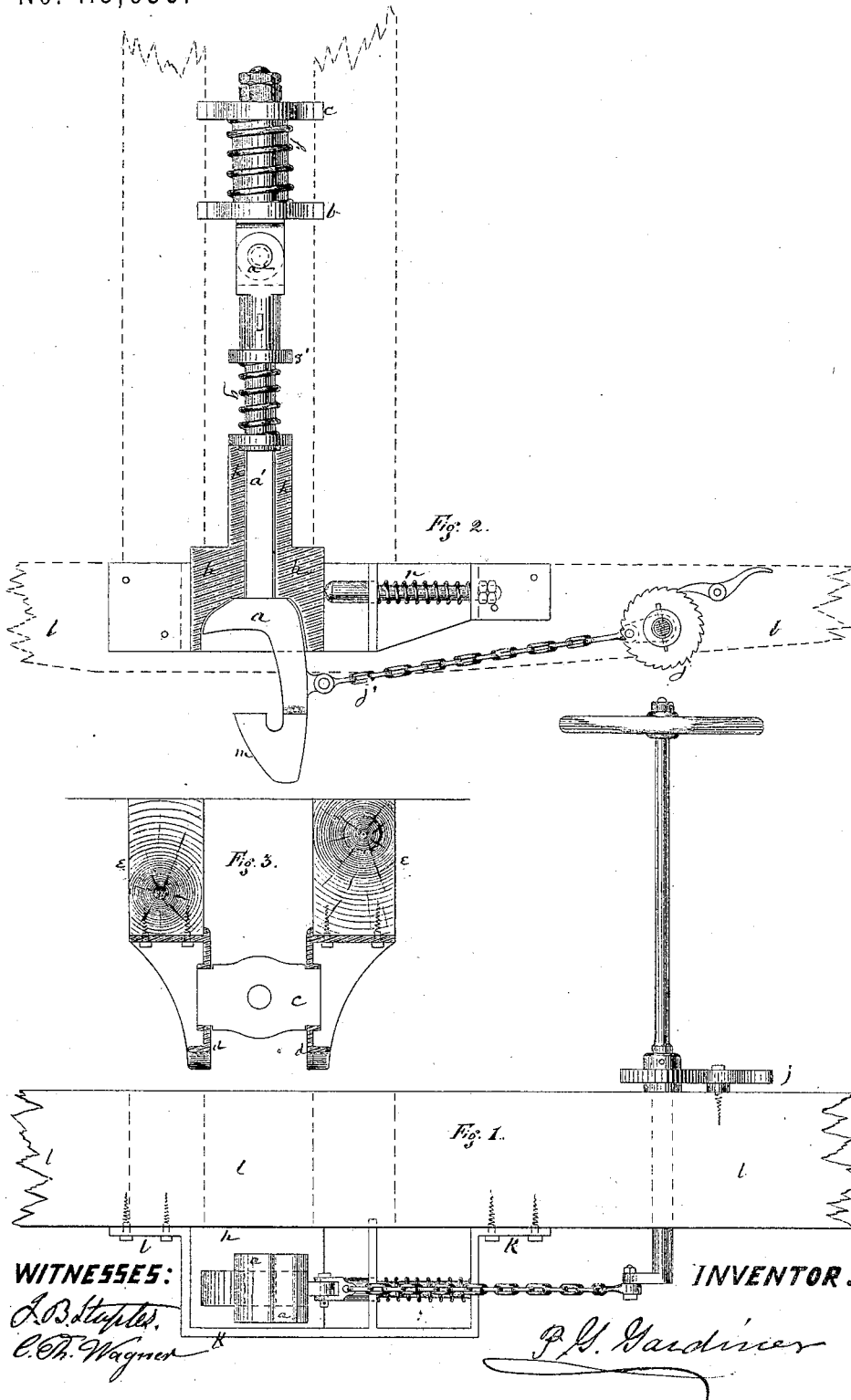


P. G. GARDINER.

Improvement in Self-Coupling Draw Hooks and Buffers.

No. 115,050.

Patented May 23, 1871.



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2 Sheets--Sheet 2.

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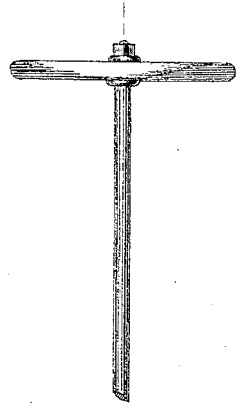


Fig. 4.

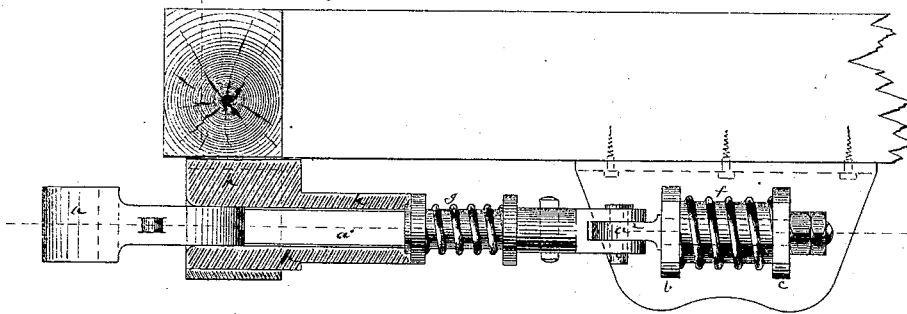


Fig. 5.

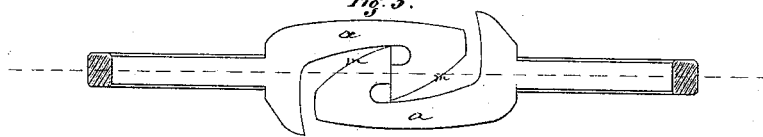
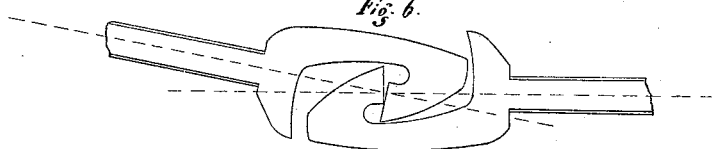


Fig. 6.



WITNESSES:

J. B. Stables.
C. D. Wagner.

INVENTOR:

P. G. Gardiner

UNITED STATES PATENT OFFICE.

PERRY G. GARDINER, OF NEW YORK, N. Y.

IMPROVEMENT IN SELF-COUPLING DRAW-HOOKS AND BUFFERS.

Specification forming part of Letters Patent No. 115,050, dated May 23, 1871.

I, PERRY G. GARDINER, of the city and county and State of New York, have invented a new and Improved Coupling for Railroad Cars, of which the following is a specification:

The object of my invention is to connect the cars of a railroad train together by a coupling-and-buffer arrangement united, so as to maintain a sufficiently-constant elastic pressure to prevent jerking or jamming when the train is in motion, or when slowing or stopping or starting; and my invention consists, first, in combining a buffer and draw-rod with a peculiarly-constructed sliding and vibrating sleeve or buffer-block, arranged upon the rod and the shoulder of the hook, so that when the cars are coupled the block or sleeve will act as an elastic buffer by a spring suitably arranged upon the draw and buffer-rod; secondly, in the combination and arrangement of the buffer-sleeve or block with springs arranged upon the rod as draw and buffer springs, so that when the cars are coupled the compression of the draw-spring shall never exhaust the pressure of the buffer-spring upon the buffer-sleeve in the drawing of the train; and when under compression from the cars slowing or stopping, the buffer-block shall act as well upon the buffer-spring as the draw-spring, by compression, with a sufficiently-elastic resistance to prevent jamming or sudden shocks of the cars.

In the accompanying drawing, Figure I is a front-end elevation of my invention, and a portion of the platform-beam to which it is attached. Fig. II is a top or plan view of the united draw and coupling rod and springs attached, and their bearings, and of the sleeve or sliding and vibrating buffer-block and coupling-hook, and of the pushing or closing coupling-spring, and of the uncoupling-wheel and chain and lever attached, the sleeve or buffer-block and part of the rod and coupling-hook being shown in horizontal section through the middle. Fig. III is an end elevation of the bearings and cross-plate, in which the end of the draw-rod is fixed opposite to that of Fig. I. Fig. IV is a side view or elevation of the said apparatus, a part of the draw-rod and sleeve-block being in section. Fig. V is a top view or plan of the coupling-hooks and buffer-heads when coupled together, with part of the rods attached. Fig. VI is the same as Fig. V,

but showing the position of the hook and rod when the cars are running on a curve.

In all the figures similar letters represent similar parts.

The construction of my invention and improvements is as follows: The draw-hook *a*, Figs. II and IV, with its rod *a'*, jointed at *a''* so as to vibrate laterally, is supported by the two parallel bearing-plates *b c*, through central openings in which the rod passes, and is secured by a screw-nut upon the end outside of the plate *c*. *b* is a compressor sliding plate. *c* is a both draw and compressor sliding plate, both *b* and *c* moving back and forth in suitable slots in the side bearing-plates *d d'*, strongly secured to the middle longitudinal timbers *e e* of the platform, Figs. III and IV. The draw-spring is seen at *f*, and the buffer-spring at *g*, Figs. II and IV. The portion of the rod *a'* which is next the draw-hook *a* is surrounded by the sleeve or sliding and vibrating buffer-block *h*. The fore part of this sleeve or block *h* is externally rectangular in form, as seen at *g*, Fig. I, while the after portion of it is tubular in form, as seen in Figs. II and IV. In its front face it is partially hollowed out or slotted to correspond with the form of the hook; and it is so placed in its bearing as to have a lateral vibration suitable for regulating the movement of the hook in coupling and uncoupling. For this purpose the space or width of the bearing is made wider than the width of the sleeve-block, to allow its lateral play. The neck of the hook does not vibrate within the sleeve-block, but is moved in a lateral direction with the block. The sleeve or buffer-block, with the rod within it and hook attached, is kept in the required central line of traction, as well as made to act as self-coupling by the pressure of the side spring and follower *i*, Fig. II, upon the side face of the sleeve-block *h*. The sleeve-block *h* is supported in the strong suspending-bracket *k*, firmly bolted and secured under the platform cross-beam *l*, Fig. I. The buffer-spring *g* is arranged upon the rod *a'*. It has its bearing at one end upon the end face of the tubular portion of the sleeve-block *h*, and at its other end its bearing is upon the shoulder *g'* upon the rod. The draw-spring *f* is also arranged upon the rod, having its bearing at one end upon the sliding

compressor cross-plate *b*, and at the other end upon the sliding draw-plate *c*. The rod, when drawn forward, slides freely through the front bearing-plate *b*. The draw-hook *a* is constructed as shown in Fig. V in plan, and in side view in Fig. IV, and in outer end view in Fig. I. It is constructed with the rounded recess in the throat of the hook within the face of the sleeve, and in the greatly-enlarged depth vertically of the head or end of the hook by which (its outer end being slightly rounded) it is made to answer as a buffer-head, by coming in contact, when the cars are coupled, with the outer face of the sleeve-block *h*.

The buffer-spring and draw-spring are adjusted and graduated with reference to their power and range of motion, so that there will be always a compression of the buffer-springs when the cars are connected, and consequently a pressure upon the sliding buffer-block *h*, so as to force against the hook or buffer-head of the opposite draw-hook.

When the cars are forced together into coupling each hook or buffer-head forces back the sleeve or sliding buffer-block so as to have the pressure of the buffer-spring against it before the coupling-hooks will be in a position to shut together. When the cars come together, in sliding or stopping the train, the buffer-block *h*, by its action on the shoulder of the rod, compresses both the buffer-spring *g* and the draw-spring *f*, the latter by forcing back compressor-plate *b*. The draw-spring *f* must have a range of motion less than that of the buffer-spring *g*, so that should the range of motion of the draw-spring be exhausted by

the resistance of the traction of the cars there will still be sufficient range of motion left unexhausted in the buffer-spring to preserve a continuous elastic pressure upon the buffer-heads; thus, for illustration, if the range of motion of the draw-spring is one inch and that of the buffer-spring an inch and a half, then if, by the force of pressure in the coupling, the buffer-spring is compressed one inch, and the cars are drawn apart in the train so as to exhaust the range of motion of the draw-spring, there will, nevertheless, always remain at least a range of motion of half an inch in the buffer-spring, and consequent elastic pressure of the buffer-block upon the opposite buffer-head.

Having thus described my combined buffer and draw-coupling, and the manner of constructing and operating the same, what I claim therein as my invention, and for which I desire Letters Patent, is—

1. The combination of the draw and buffer-rod with the peculiarly-constructed sliding and vibrating sleeve or buffer-head *h*, arranged upon the rod and shoulder of the hook, in connection with the buffer-spring, so as to maintain a constant elastic buffer pressure between the cars, constructed, arranged, and operating substantially as described

2. The combination of the buffer-head or sleeve with the springs *g* and *f*, arranged upon the rod as draw and buffer springs, constructed and operating substantially as described.

P. G. GARDINER.

Witnesses:

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