M. T. GREENLEAF & G. Q. ADAMS.

Car-Coupling.

No. 208,307. Patented Sept. 24, 1878.

Fig 1.

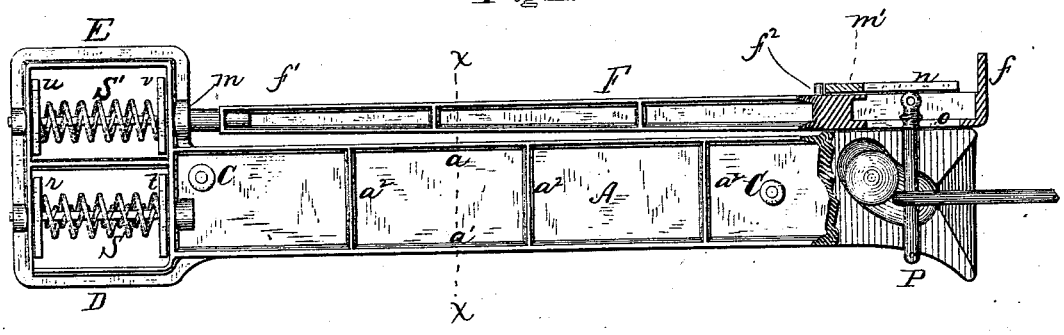
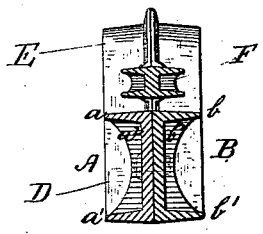



Fig 2.




Witnesses.

Harry King

W. C. Jordinston

Inventors

Miller T. Greenleaf

and

George Q. Adams.

By Hill & Ellsworth

His Attys

# UNITED STATES PATENT OFFICE.

MILLER T. GREENLEAF AND GEORGE Q. ADAMS, OF QUINCY, ILLINOIS.

## IMPROVEMENT IN CAR-COUPLINGS.

Specification forming part of Letters Patent No. **208,307**, dated September 24, 1878; application filed February 1, 1878.

*To all whom it may concern:*

Be it known that we, MILLER T. GREENLEAF and GEORGE Q. ADAMS, both of Quincy, in the county of Adams and State of Illinois, have invented a new and Improved Car-Coupling; and we do hereby declare the following to be a full and exact description of the same, reference being had to the accompanying drawing, forming a part of this specification, in which—

Figure 1 is a side elevation, a portion of the wall of the front end of the draw-bar having been broken away to reveal the internal construction, and Fig. 2 is a cross-section in line *x x* of Fig. 1.

Similar letters of reference indicate the same parts in the several figures.

This invention relates to the class of automatic couplings for railroad-cars; and consists in the following-described improvements therein—to wit, first, in combining a spring draw-bar and spring-buffer in one structure, the buffer being supported by and arranged directly above the draw-bar; secondly, in the mode of constructing and arranging the draw-bar, the buffer, and their respective springs; thirdly, in casting the draw-bar in two pieces, of girder form, which are bolted firmly together; fourthly, in casting the draw-bar with a double yoke, one portion of which is to hold the draw-bar spring and the other to hold the buffer-spring; and, lastly, in certain details of construction, all as will be hereinafter more particularly set forth.

In representing our improvements we have shown them adapted to that form of automatic coupling which is secured to us by Letters Patent of the United States No. 184,149, granted November 7, 1876. We do not confine the application of the present improvements, however, to that particular kind of coupling, but claim them as applied to any form of automatic coupling with which they are capable of being practically used.

In the drawings, A B are two castings of iron, steel, or other suitable metal, adapted to fit closely together and to be bolted firmly to each other by transverse bolts C C, to form the draw-bar and draw-head for a railroad-car. The draw-head, as thus constructed, is to have a suitable concave face to guide the link properly in, and is to have suitable provision for the coupling-pin and for the mechanism, whatever it may be, that effects the automatic coupling of the cars together.

One material feature of its construction is its girder form, each half being constructed with a wide horizontal rib, *a* or *b*, at the top, another similar rib, $a^1$ or $b^1$, at the bottom, and a series of vertical ribs, $a^2$ or $b^2$, connecting and bracing the upper and lower ribs, and the web between them.

The lateral expansion of the draw-bar at the front end, to form the head, strengthens the casting at that point, and at the rear end it is further strengthened by casting upon it two square boxes or yokes, D E, the lower one of which accommodates the draw-bar spring S, while the upper one accommodates the buffer-spring S′, as shown, the axis of the buffer-spring coming above the upper surface of the draw-bar proper and in line with sockets *m* *m′* cast upon or in the draw-bar for the purpose of receiving and holding the sliding buffer-bar F.

The rear socket, *m*, need be only a hole through the shoulder or end of the yoke, but the front socket, *m′*, should be made in the form of a strap extending over the buffer-bar, and should be provided with a slot, *n*, in its upper side, through which the coupling-pin P can move up and down. The buffer-bar F should also be provided with an elongated slot, *o*, to accommodate the coupling-pin and enable the buffer to slide freely in its sockets. The buffer-head *f*, or a stop, $f^1$, serves to limit the backward movement of the buffer, while a pin or other suitable stop, $f^2$, limits its forward movement.

The buffer-bar, like the draw-bar, is cast in two pieces, which, when bolted together, give it a girder form, strengthened by longitudinal and vertical ribs on each side, as shown.

The two springs S S′, when of spiral form, are held and guided upon axial rods, and, whatever may be their form, they are arranged to bear against plates *r t u v* respectively, each part of which is connected to the structure of the car in the manner usually employed in securing the draw-bar springs. The rear end of the buffer-bar bears against, or is secured to, the plate *v*, so that the spring S′ will, in-

dependently of the other, be under compression when the buffer is forced back, or, in conjunction with the other, will be under compression either when the draw-bar is drawn forward or forced back. The draw-bar and buffer-bar are respectively cast in two parts and bolted together, merely for convenience and facility of construction. Each may be cast in a single piece, if preferred, as the combination of mechanism and its operation is not in any manner dependent upon the mode of casting the draw-bar and buffer.

The operation of this improved draw-bar and buffer is as follows: To couple a coach we place the link in one of the couplings, raise the pin of the opposite coupling, and bring the cars together. The buffer-heads first come in contact, and are each forced back, compressing their springs S′, and allowing the projecting link to enter the opposite head and couple thereto. The compressing of the springs S′ at the same time partially checks the movement of the car, but not so much as to prevent the two draw-heads from also coming together and compressing the lower springs, S, which, in connection with the other, completely arrest the movement of the car. Both springs S S′ then recoil and force the coaches apart till they check against the link and pins, when the four springs hold the cars in that position, thus taking up all the slack and preventing lost motion.

It will be observed that the buffer-heads project slightly beyond the draw-heads, the extent of such projection being adjusted to the length of the link and the character of the buffer-spring, so as to properly take up the slack of the coupling. It will also be observed that the movement of the car in coupling is arrested progressively by the two springs, the upper spring first acting independently, and then both acting together. It will also be observed that, when the train is moving, the upper springs continuously act as buffers, independently of the lower ones, the latter coming into action as buffers only on extraordinary occasions, and that both springs continuously sustain the forward draft of the coupling. The buffer-bar may be arranged on the under side of the draw-bar, if preferred.

Having thus described our invention, we claim as new—

1. The combination of the spring-buffer and the draw-bar, the former being attached to the latter, so as to form one structure for attachment to a car, substantially as described.

2. The draw-bar cast with two yokes, D E, for the two springs, and provided with sockets to hold and guide the buffer-bar, substantially as described.

3. The combination of the springs S S′ and plates *r t u v* with the draw-bar and buffer-bar, substantially as described.

4. A draw-bar cast in two pieces, adapted to be bolted together in the form of a girder-beam, having strengthening longitudinal and vertical ribs, substantially as described.

5. A buffer-bar cast in the form of a girder-beam, with strengthening longitudinal and vertical ribs, substantially as described.

6. A coupling-bar constructed in two parts, the lower one adapted to receive the link and pin, or other coupling device, and the upper one projecting beyond the lower one to act as a buffer, each having their appropriate springs, substantially as described.

7. A draw-bar constructed with the automatic ball coupling and with a spring buffer-bar supported and sliding upon it, substantially as described.

MILLER T. GREENLEAF.
GEORGE Q. ADAMS.

Witnesses:
CYRUS B. ADAMS,
CHAS. A. WARREN.