2 Sheets—Sheet 1.

# MUSSER & CARKHUFF.

## Car Coupling.

No. 111,767. Patented Feb. 14, 1871.

Fig. 1

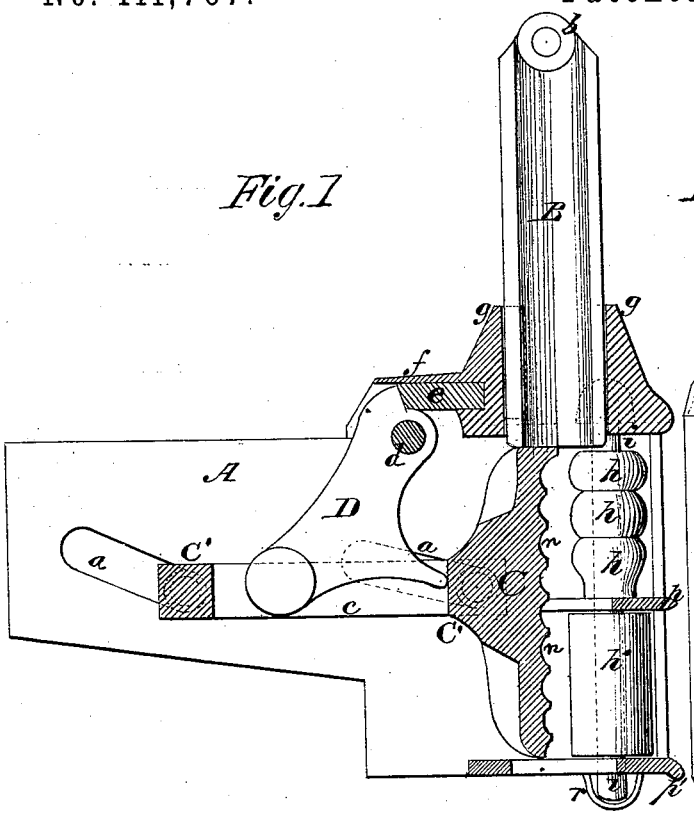



Fig. 2

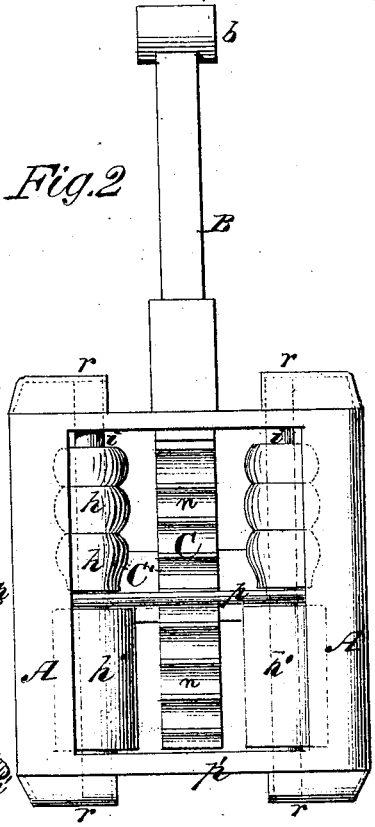
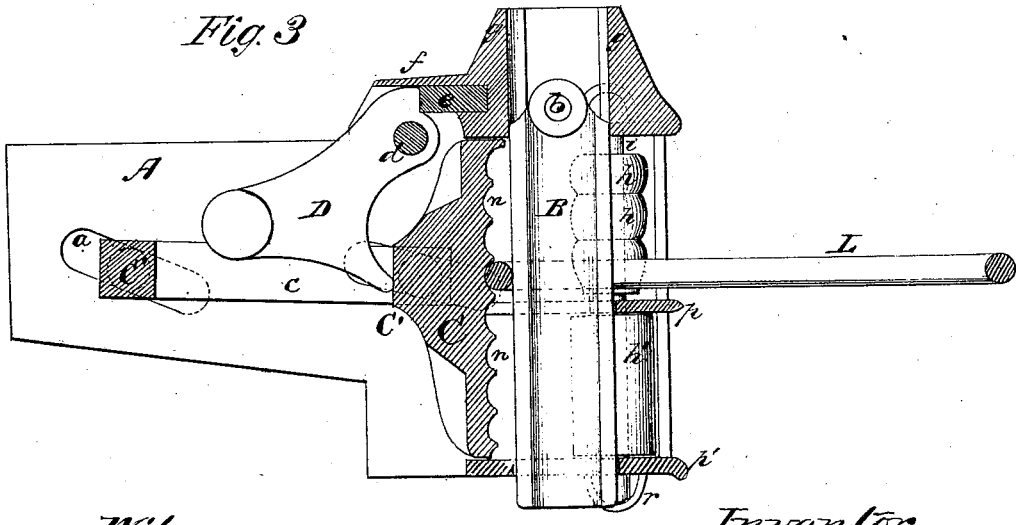



Fig. 3

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2 Sheets—Sheet 2.

# MUSSER & CARKHUFF.

## Car Coupling

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Fig. 4

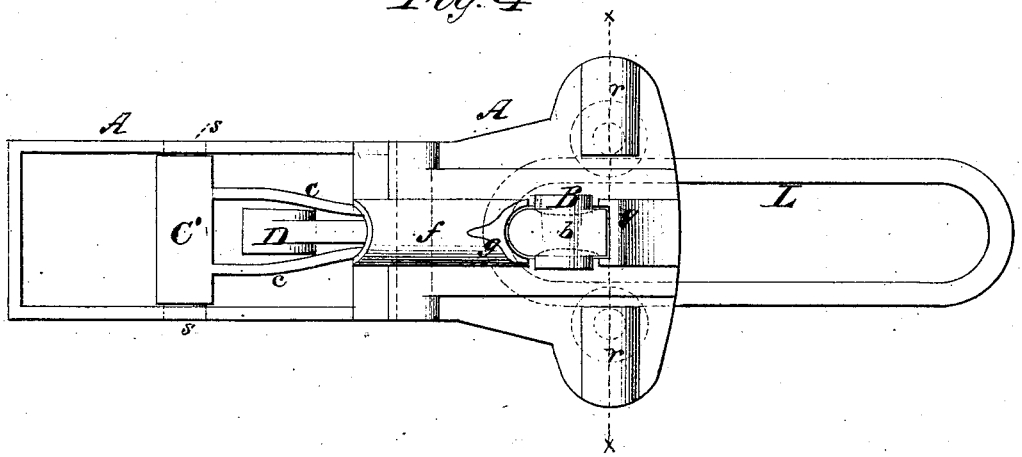
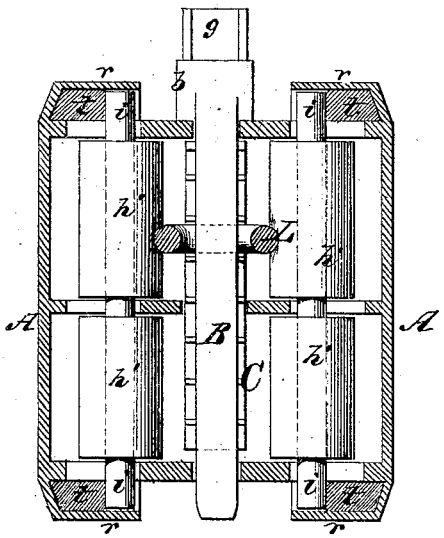



Fig. 5

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JAMES W. MUSSER AND RALPH CARKHUFF, OF LEWISBURG, PENNSYLVANIA.

Letters Patent No. 111,767, dated February 14, 1871.

## IMPROVEMENT IN CAR-COUPLINGS.

The Schedule referred to in these Letters Patent and making part of the same.

*To all whom it may concern:*

Be it known that we, JAMES W. MUSSER and RALPH CARKHUFF, of Lewisburg, in the county of Union and State of Pennsylvania, have invented a new and improved Car-Coupling; and we do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawing making part of this specification, in which—

Figure 1, plate 1, is a section taken longitudinally and vertically through the center of one of the coupling-boxes, showing the pin raised.

Figure 2, plate 1, is a front view of one of the coupling-boxes with the pin raised.

Figure 3, plate 1, is a similar view of the same parts shown in fig. 1, indicating the position of these parts while holding a link.

Figure 4, plate 2, is a plan view of a coupling-box and link, the latter being held by the pin, as in fig. 3.

Figure 5, plate 2, is a section taken transversely through fig. 4, in the vertical plane indicated by dotted line *x x* in fig. 4.

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

This invention relates to certain improvements on automatic car-couplings for railroad-cars.

The nature of our invention consists—

First, in a novel construction and arrangement of the coupling-pin support, as will be hereinafter described.

Second, in a novel combination of a notched longitudinally-sliding coupling-pin support, laterally-movable side jaws, and yielding surfaces on such jaws, whereby the pin is held up, the coupling adapted for different heights of cars, and the link is sustained at its extremity, and also between its ends, without any liability of the pin being dropped too soon, all as will be hereinafter described.

Third, in a coupling-pin of the I-form, hereinafter described, in combination with the guiding or coupling-pin box, whereby lightness and great strength are secured and much binding friction is avoided.

To enable others skilled in the art to understand our invention, we will explain its construction and operation.

In the accompanying drawing—

A represents the coupling-box, which has parallel vertical sides terminating in an enlarged head, within which latter the link L is received when coupled.

The box represented in the drawing has its enlarged head horizontally divided by a partition, *p*, above and below which, and on opposite sides of a vertical plane passing longitudinally through the center of the coupling-box, are laterally-yielding jaws arranged in vertical planes equidistant from said central plane.

Each jaw is composed of a rod, *i*, the ends of which pass freely through transversely-oblong slots made through the top and bottom plates of the box A, and are received in boxes *r r*, against springs *t t*, as shown in fig. 5, plate 2. These rods *i* are thus allowed to yield laterally outward against their springs.

On the rods *i i*, I apply cylinders of India rubber, *h'*, as shown in the drawing, or, instead of these rubber cylinders, the balls or beads *h* may be applied on the rods *i*, as shown in figs. 1, 2, and 3. We have shown the two kinds in figs. 1, 2, and 3, but in practice it is not intended to employ them together.

In the rear of the laterally-yielding jaws above described, and in the center of the coupling-box A, is a self-acting longitudinally-movable pin-support and link-holder, C.

This holder C is arranged vertically, and is connected rigidly to the front ends of arms *c*, and guided and supported by anti-friction rollers *s* on the extremities of transverse bars C', which rollers work in inclined slots *a* made through the side walls of the coupling-box.

In practice it is believed that the weight of the pin and link-holder C and its supporting-bars C' will, with the inclined slots or ways *a*, cause said holder to operate without a spring; but, in order to insure the positive working of the holder C, we employ a spring, *e*, which is confined in a tube, *f*, on the top of the coupling-box, and which operates on the holder C through the medium of a segment-lever, D, pivoted to the coupling-box at *d*. The spring *e* operates constantly against the lever D, and causes the toe of this lever to positively force the holder C forward.

The holder C is so denominated because it holds the coupling-pin B in the elevated position indicated in figs. 1 and 2, ready to effect a coupling when the holder C is pressed back by the action of a link, L, against it.

The coupling-pin B is of an H-form in cross-section, which gives it great strength to resist transverse strain, combined with lightness; and this pin terminates at the upper end in a transversely-perforated head, *b*.

The pin B is held between vertically-grooved guides *g g*, rising from the top of the coupling-box; and when the pin is in the position indicated by fig. 3, to wit: when a coupling is effected, it passes through and is held by the bottom plate *p* of the coupling-box, as well as by the guides *g g*.

It will be seen from the above description that, in the act of making a coupling, the link L is passed between the laterally-yielding spring-jaws *i*, which crowds them apart, and causes them to gripe and hug

the link with some force; the link then presses back the holder C far enough to release the coupling-pin B, which drops through the link and assumes the position indicated in fig. 3. When the link is uncoupled, by raising pin B the pin-holder C will instantly assume the position indicated in fig. 1, and thus support the pin ready for another coupling.

By reference to figs. 1, 2, and 3, it will be seen that the front face of the coupling-pin holder C is notched at *n*. These notches are intended to receive the end of a link, L, as shown in fig. 3, and serve, in conjunction with the vertically-yielding surfaces *h* or *h'* on the laterally-yielding spring-jaws *i*, to prevent the link from dropping down or receiving undue vertical motion. Without such a provision the link would drop down to the lowest part of the coupling-box as soon as applied thereto, and would not be held in proper position by one set of coupling devices to effect a coupling with another set; but, by means of the side jaws and notched bar C, the lank will be held in proper position to effect and maintain a coupling, and it can also be adjusted for high or low platforms.

The coupling-pin B is of an H-form in cross-section, which affords lightness and at the same time great strength, and this pin is so arranged in the coupling-box that it receives the strain of the link across its greatest width.

Having described our invention,

What we claim as new, and desire to secure by Letters Patent, is—

1. The longitudinally-movable and vertically-arranged supporting-bar C and segment-lever D, in combination with the supporting-bars C' and inclined slots *a*, substantially as described.

2. The laterally-yielding jaws *i* and their yielding surfaces *h* or *h'*, in combination with the longitudinally-movable coupling-pin support C, notched, substantially as described.

3. The coupling-pin B of the H-form, in combination with the guides *g g* or coupling-box herein described.

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RALPH CARKHUFF.

Witnesses:
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S. D. BATES.