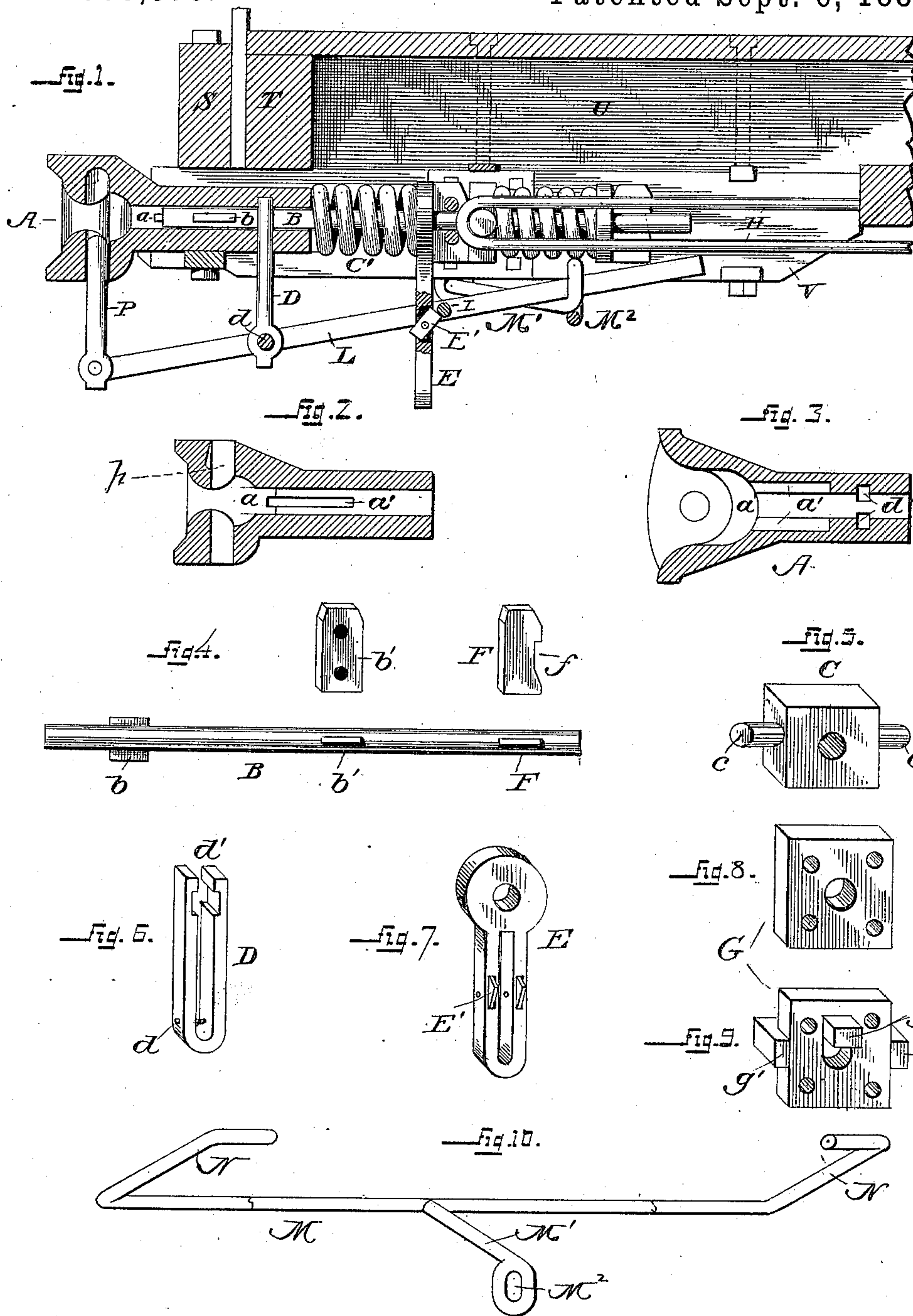


(No Model.)

J. R. AVERY.  
CAR COUPLING.

No. 369,578.

Patented Sept. 6, 1887.



Witnesses:

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# UNITED STATES PATENT OFFICE.

JAMES R. AVERY, OF LOUISVILLE, KENTUCKY.

## CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 369,578, dated September 6, 1887.

Application filed December 1, 1886. Serial No. 220,408. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES R. AVERY, a citizen of the United States, residing at Louisville, in the county of Jefferson and State of Kentucky, have invented a new and useful Improvement in Car-Couplings, of which the following is a specification.

This invention relates to car-couplings in which links and pins are employed and operated, and is designed as an improvement on the invention forming the subject-matter of Letters Patent No. 330,284, granted me November 10, 1885.

The object of the present invention is to improve the construction of the coupling shown, as above referred to, with a view to making the operations thereof more positive and reliable and to render the apparatus more efficient.

With these objects in view my invention resides, essentially, in a car-coupling comprising a coupler-head, a draw-bar upon which the coupler-head has longitudinal movement, a pivotal cross-bar providing a bearing for the draw-bar and an abutment for springs thereon, interposed between the coupler-head and cross-bar and between the cross-bar and a washer impinged against a key provided near the rear end of the draw-bar, draft-rods connecting the coupler or pivotal cross-bar with the king-bolt transom of a car, and plates or journal-bearings provided for attachment to cars, locomotives, and tenders.

Furthermore, the invention resides in a coupling constructed as specified, having a lever pivoted in a hanger, said hanger depending from the coupler-head, and being provided at one end with a coupling-pin and rearward with a cross rod or pin, there being a latch-hanger interposed between the rear end of the draft-spring and a key, or, preferably, between the rear end of the buffer-spring, and a key bearing against the cross-bar transversely through the draw-bar, thereby preventing the rearward movement of either, or both draw-bar and hanger. The latch-hanger is provided with gravitating latches arranged to engage the cross-rod of the lever carrying the coupling-pin, and thereby withhold said pin from the link-cavity preparatory to a coupling.

Furthermore, the invention consists in a pin or lever operating device, whereby the

operation of the coupling is rendered more reliable, positive, secure, and efficient.

In the accompanying drawings, forming part of this specification, and in which like letters of reference indicate corresponding parts, Figure 1 is a side elevation, partly in section, showing the relative position of the parts preparatory to coupling. Fig. 2 is a vertical sectional view of a coupler-head, the pin-hole extending through the coupler-head and having in the upper front wall a pin-seat. Fig. 3 is a horizontal sectional view of the same. Fig. 4 is a detail view of the draw-bar and keys, showing the position of the keys in the draw-bar. Fig. 5 is a detail view of the cross-bar. Fig. 6 is a detail view of the hanger to which the lever for operating the coupling-pin is pivoted. Fig. 7 is a detail view of the latch mechanism or hanger which holds the lever for operating the coupling-pin in position preparatory to coupling. Figs. 8 and 9 are detail views of the plates which form bearings for the cross-bar. Fig. 10 is a detail view of the device which operates the lever and consequently brings the coupling-pin in position ready for coupling.

Similar letters refer to similar parts throughout the several views.

In the drawings, A represents the coupler-head, which is provided with an inclined and curved mouth to its link-cavity, formed by converging plane walls blending with convex or, preferably, reverse circular walls, so that a link is received, directed, and guided to said cavity for the purpose of receiving the coupling-pin. A pin-seat, *p*, is formed in the upper front wall of the pin-hole, to hold a pin, *P*, therein for coupling from above. The same pin-hole may be used in coupling from below; but for coupling from below I prefer that the pin-hole shall enter the link-cavity vertically through its lower wall, passing therethrough into its upper wall in socket form, as shown in Fig. 1, to prevent the accumulation of anything that will interfere with the operations of the link and pin therein.

The rear end of the coupler-head A, I have provided with a hollow neck having recesses or pin-seats *a'* and hanger-holes *d'*. The draw-bar B is provided with key-holes near each end and intermediate, having keys *b*, *F*, and *b'*, as in Fig. 1. The said draw-bar slides in



the hollow neck of the coupler-head, and its longitudinal movement therein is regulated by the length of the recesses or pin-seats  $a'$ , in which rests the pin  $b$ .

5 C represents a pivotal cross-bar provided with nibs  $c$ , forming journals entering the center holes of the plates G, said plates being secured to the frame of a car, locomotive, or tender with bolts and nuts or equivalents.  
 10 This cross-bar C forms an abutment for the ends of the springs  $c'$  and  $c''$ , or the spring  $c'$  bears at one end against the coupler-head A and at the other against the latch-hanger E, impinging against the key  $b'$ , interposed be-  
 15 tween the said hanger E and cross-bar C, so that when two couplers come together the force imparted is received by the spring  $c'$  with yielding resistance, thereby preventing violence and injury to persons and property  
 20 and operating to release the cross-rod I of the lever L.

The rearward movement of the draw-bar B through the cross-bar C is prevented by the key  $b'$ , which passes transversely through the  
 25 draw-bar and rests against the cross-bar. The spring  $c''$  is arranged between the cross-bar C and a washer impinging against the key F, which passes through the draw-bar near its rear end. This key F is provided with a notch,  
 30  $f$ , in its edge for security against displacement, and with beveled edges converging to one end for convenient insertion, and the notch  $f$  is sloped, diverging toward the opposite end of said key, for convenient withdrawal. The  
 35 key F thus formed, having uniform thickness, forces the contraction of the spring  $c''$  only as required for its insertion and withdrawal from the draw-bar. The force of draft is exerted upon the spring  $c''$ , and the spring partially  
 40 yielding to this force a gentler and easier start is obtained than is usual in the use of couplers now employed.

In order that the coupling may be made to act automatically when two of my couplers  
 45 (attached to cars, locomotives, or tenders) come together, I have provided the coupler-head with the hanger D and the draw-bar B with the hanger E depending therefrom between the springs  $c'$  and key  $b'$ , or between the springs  
 50  $c''$  and key F. In this hanger D, depending from the coupler-head upon the pin  $d$ , is pivoted an operating lever, L, upon the front end of which is pivotally attached the coupling-pin P. The rear end of this pin-operating lever L is provided with a transverse pin or  
 55 rod, I, and I provide the hanger E with gravity-latches  $E'$ , the normal position of the pin or rod I being on the top of the gravity-latches  $E'$ . Thus in its normal position the coupling-pin will remain below the link-cavity, as  
 60 shown in Fig. 1. When the cars come together and the coupler-heads A are forced rearward, the lever or levers L, by reason of being pivoted in the hanger or hangers D, carried by the coupler head or heads A, are moved  
 65 rearward sufficient to allow the pin I to clear the gravity-latches  $E'$ . This allows the rear

end of the lever L, which is the heavier, to fall, moving the forward end, carrying the coupling-pin, upward, and with it the coupling-pin into position to engage the coupling-link. 70

In order to disengage or withdraw the coupling-pin from the link it is only necessary to raise the rear end of the operating pin lever L. For this purpose I have constructed a pin or lever operating device pivoted to a car-frame preferably below and horizontal to the coupler and above the pin-lever L. (Shown in Fig. 1.) This device consists preferably  
 80 of a wrought-iron rod, M, having an arm,  $M'$ , with a loop,  $M''$ , engaging the lever L, also angled ends N, by the elevation of which the rear end of the lever L is raised. The cross-rod I passes the gravity-latches  $E'$  and is suspended thereby, and the pin P is withdrawn and withheld. This result may be obtained  
 85 by taking hold of either angle N and turning its ends crank-fashion from the side of the car. 90

For greater security, strength of combination, and protection to the car-frame and draft-timbers, I connect the cross-bar C rigidly to the king-bolt transom by means of rods H, and provide angles  $g'$  and bolt  $g$ , in combination with plates G, for attachment to cars, locomotives, or tenders. 95

Referring to the coupler-head A, the pin-seat in the upper front wall of the pin-hole is a feature shown in Letters Patent No. 315,884, issued to me April 14, 1885. The link-cavity, rest, and draw-bar cavity, entrance thereto and exit therefrom, and the pin-hole entering the link-cavity through its lower wall vertically into its upper wall in socket form, the draw-bar B, the cross-bar C, hanger D, with lever L, provided with pin P, and draft-rods H, connecting two cross-bars upon the same car, are parts and features substantially as set forth in Letters Patent No. 330,284, issued to me November 10, 1885. 100

Having thus fully described my invention and specified that which is old and heretofore granted me by Letters Patent referred to, what I claim as new, and hereby desire to secure by Letters Patent, is— 115

1. In a car-coupler, a hanger provided with a gravity latch or latches, consisting of pieces secured in slots in said hanger, the tops of which pieces form a rest for the transverse rod of the pin-operating lever, substantially as shown and described. 120

2. In a car-coupler, a key having one of its ends tapering, whereby insertion is rendered easy, and having near its other end a depression or notch, one edge of which forms a shoulder adapted to rest upon the draw-bar, and the other edge, being beveled, provides means whereby the key may be driven out of the slot without injury to either, substantially as described. 125

3. The combination, in a car-coupler, of a coupler-head, a draw-bar secured therein by a key which passes through a slot in the 130



draw-bar and engages a slot in the coupler-head, a cross-bar, a spring interposed between the cross-bar and the coupler-head, a lever carrying a coupling-pin and mounted in a hanger depending from the coupler-head and secured in slots therein, and a hanger depending from the cross bar between said coupler-head and the rear end of the lever, substantially as shown, and for the purposes specified.

4. The combination, in a car-coupling, of a coupler-head, a draw-bar secured therein by a key, a cross-bar, a spring interposed between the cross-bar and the coupler-head, a lever carrying a coupling-pin and mounted in a hanger depending from the coupler-head, and a hanger depending from the cross-bar between the coupler-head and the rear end of the lever, said hanger having slots and provided with pieces secured in the slots, forming

a gravity-latch, substantially as and for the purposes set forth.

5. In a car-coupler, the coupler-head having a pin-hole with the seat *p*, the link-cavity with an entrance and opening thereto, the link and a draw-bar cavity, *a*, therefrom, the hollow neck with key-seats *a'* therein, and hanger-holes *d'*, substantially as shown, and for the purposes specified.

6. In a car-coupler, the coupler-head A, the draw-bar B, the coupler-bar C, the hangers D and E, the key F, the plates G, the rods H, the pin-lever L, and the lever-operating device M, all respectively and collectively as shown, for the purposes specified.

Signed and witnessed November 27, 1886.

JAMES R. AVERY.

Witnesses:

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