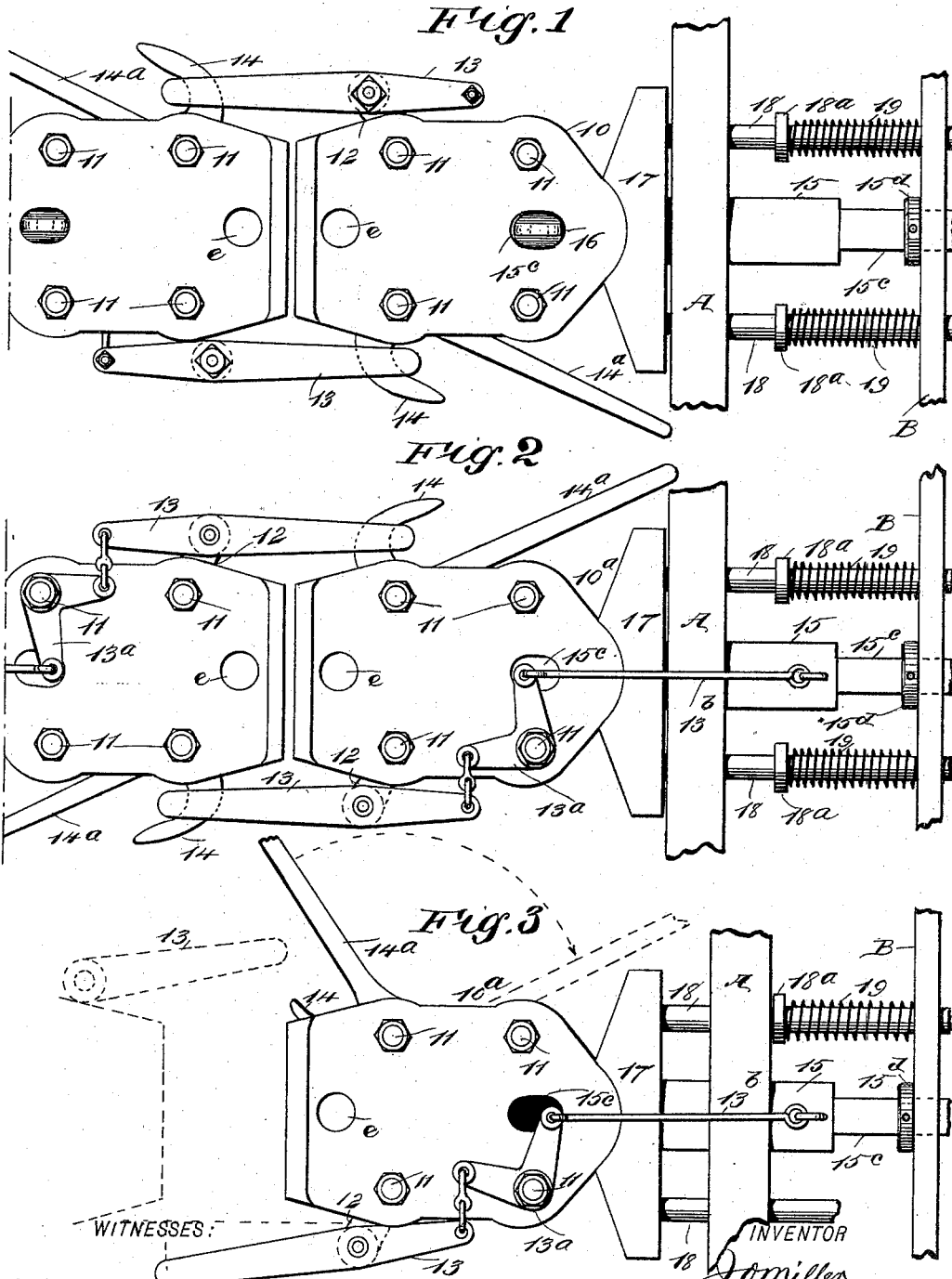


No. 526,250.

Patented Sept. 18, 1894.



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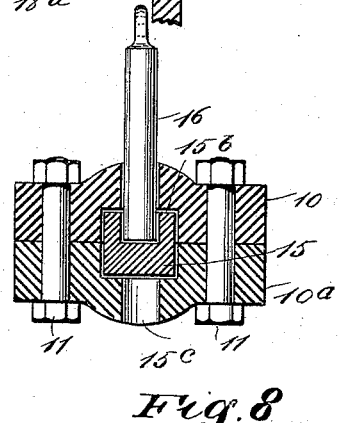
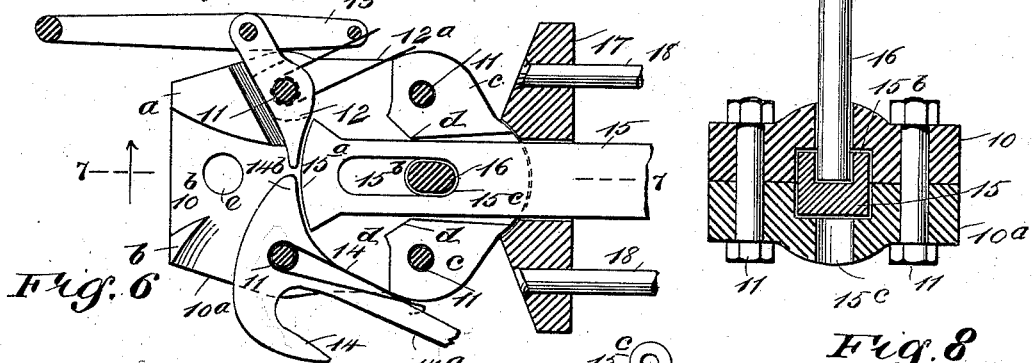
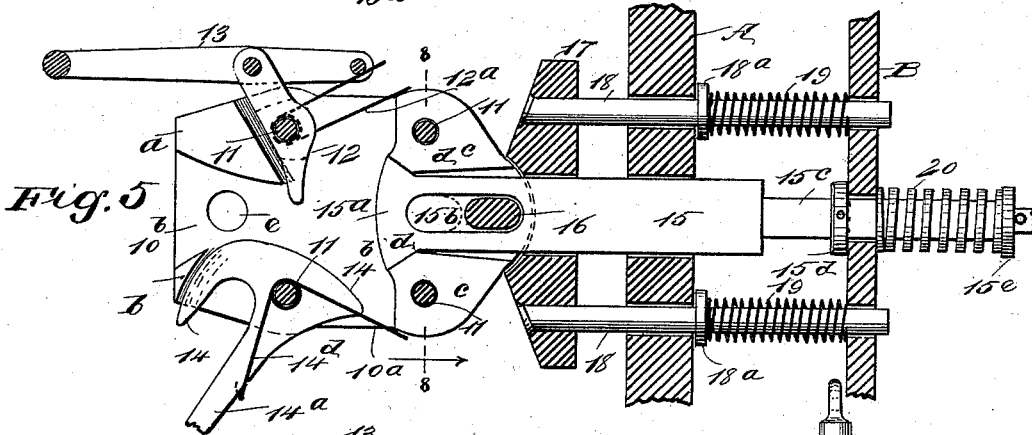
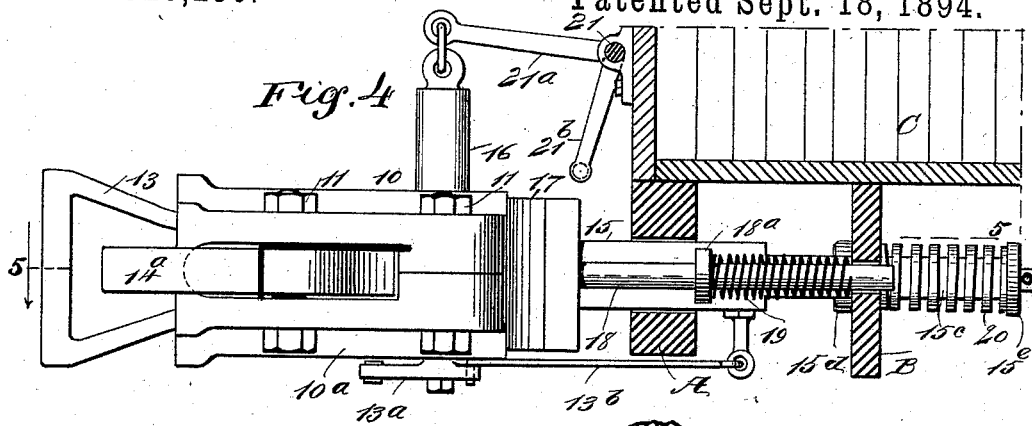
(No Model.)

2 Sheets—Sheet 2.

J. O. MILLER.  
CAR COUPLING.

No. 526,250.

Patented Sept. 18, 1894.



# UNITED STATES PATENT OFFICE.

JAMES O. MILLER, OF ROCHESTER, INDIANA.

## CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 526,250, dated September 18, 1894.

Application filed February 20, 1894. Serial No. 500,893. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES O. MILLER, of Rochester, in the county of Fulton and State of Indiana, have invented a new and useful Improved Car-Coupling, of which the following is a full, clear, and exact description.

My invention relates to an improved car coupling of the automatic type, and has for its objects, to provide a novel, practical device of the character indicated, which will be adapted for self coupling with a similar coupling, which will be detachable from either side of a car, and that may be readily coupled with an ordinary car coupling of the link and pin type.

To these ends, my invention consists in the construction and combination of parts, as is hereinafter described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures and letters of reference indicate corresponding parts in all the views shown.

Figure 1 is a broken plan view of the frame of a car, and main portions of two of the improved car couplings in coupled condition. Fig. 2 is an inverted plan view of the same. Fig. 3 is an inverted plan view of the improvement, showing in full lines the parts in an uncoupled condition and showing in dotted lines, their direction of movement during the act of coupling. Fig. 4 is a sectional side view of the end of a car, and a side view of the improvement thereon and in an uncoupled condition. Fig. 5 is a sectional plan view on the line 5—5 in Fig. 4, showing the parts in uncoupled adjustment. Fig. 6 is a sectional plan view of the same showing the parts in a coupled condition. Fig. 7 is a sectional side view, taken on the line 7—7 in Fig. 6; and Fig. 8 is a transverse sectional view, on the line 8—8 in Fig. 5.

The drawhead of the improved car coupling consists of two equal sections 10, 10<sup>a</sup>, that are joined together at their center of thickness in a horizontal plane, by the screw bolts 11, which are so located as to avoid interference with working parts, the contour of the similar parts 10, 10<sup>a</sup>, being oblong, nearly rectangular, and converged at the rear end, as shown in Figs. 1 and 2. The half sections of the drawhead are recessed oppositely on their

inner faces to provide a throat 10<sup>b</sup> at the front when these parts are secured together, the recess being widened to form a slot at each side, leaving portions *a*, *b*, *c*, *c*, remaining, of a full thickness in each half section of the drawhead. The portions *a*, *b*, that bound the forward terminals of the side slots in the drawhead are of different dimensions and forms, the latter being adapted to suit the shapes of parts that are caused to impinge their rear sides, and are preferably sloped at their rear shoulders, as shown in Figs. 5 and 6.

On one side of the composite drawhead 10, 10<sup>a</sup>, at a suitable distance rearward of the abutment *a*, the arm 12 is pivoted by one of the bolts 11, that passes through it intermediate of its ends, and also through both sections of the drawhead, wherein it is secured by a nut on one end of the bolt. On the outer end of the arm 12, an elongated link 13 is pivoted, the arm 12 being introduced between the side members of the link, which members are spaced apart toward the ends that are forward in service, and are joined together by a strong vertical bar, a bolt serving to connect their rear ends, and by springing the side members preventing looseness between the link and its supporting arm. On the bolt 11 that is the pivot of the arm 12, a coiled spring 12<sup>a</sup> is placed, which has two elongated limbs, one of these having contact with the bolt at the rear end of the link, and the other pressing upon the abutment *c*, that is behind the arm 12, so that the link and arm will be held in the position indicated in Figs. 5 and 6, the arm 12 having contact at its front edge with the sloped rear wall of the abutment *a*. The forwardly projected portion of the link 13 is permitted to vibrate toward the side of the drawhead which is preferably sloped on the side a proper degree toward a median line at the front end, to allow such a movement of the link to take place. On the other side of the drawhead, there is a hook piece pivoted in the drawhead slot, which is longer on this side to afford room for the free movement of the hook-piece, the latter consisting of a limb 14<sup>a</sup> that is preferably made straight, and at its forward end is formed with an outwardly and rearwardly-bent hook 14, and a toe 14<sup>b</sup>, that projects inwardly of a length that will permit its inner

terminal to avoid contact with the inner end of the arm 12, when these parts are disposed as shown in Fig. 6. The hook 14 is pivoted within the slot of the drawhead by a vertical bolt 11, that passes through a vertical perforation in the drawhead sections, and through a hole in the hook-piece that is formed in its forward portion between the hook and toe, and about in a line with the axial center of the limb 14<sup>a</sup>. There is a coiled spring 14<sup>d</sup> provided for the normal projection of the limb 14<sup>a</sup> toward the front, the degree of said forward rocking movement being determined by the impinge of the hook proper upon the rear sloped wall of the abutment *b*, as shown in Fig. 5. The spring 14<sup>d</sup> is made to encircle the pivot-bolt 11 of the hook, and its two spring limbs respectively engage with the abutment on this side of the drawhead, and with the hook limb 14<sup>a</sup>, the end of the spring that has contact with the limb being bent to hook upon the latter, as represented in Figs. 5 and 6.

The drawhead is longitudinally slotted between the rear abutments *c*, of a proper breadth and depth to permit the free insertion and longitudinal reciprocation of the drawbar 15, and as shown in Figs. 5 and 6, the slot mentioned is gradually widened rearwardly from a point *d*, on each abutment *c*, and outwardly sloped toward the front from the same points at a greater angle of divergence from a median line. There is a laterally enlarged head portion 15<sup>a</sup>, formed on the front end of the drawbar, which head is fitted to contact with the sloped front side walls of the abutments *c*, and forwardly of the parts that in service will engage these abutment walls the front terminal of the drawbar is convex-curved for a proper engagement with the in-curved rear edges of the toe on the hook limb and inward projection of the arm 12, as indicated in Fig. 6. The drawbar 15 and drawhead sections 10, 10<sup>a</sup>, are perforated so as to align the side walls of the apertures 15<sup>c</sup> that are formed at the transverse center of the parts mentioned, for the reception of a locking pin 16.

The vertical perforation in the drawhead sections is formed at a point nearly opposite the forward sloped walls on the abutments *c*, and is elongated rearwardly, the pin 16 being fitted to slide loosely within it. The aperture in the drawbar 15 is formed completely through said bar at a point which will permit it to vertically align with the aperture in the drawhead, when the latter is arranged to project its hook limb rearwardly, as represented in Fig. 6, and from the through aperture in the bar, a recess 15<sup>b</sup> is forwardly produced in the upper surface of the bar 15, that is in depth equal to one half the thickness of the bar, as shown in Figs. 7 and 8. A yoke piece 17 is furnished, which comprises a bar that is preferably sloped on the front side from a central in-curved portion of said side, that fits neatly upon the out-curved rear end

wall of the drawhead sections 10, 10<sup>a</sup>; and a central rectangular slot is formed in the yoke-piece from front to rear, for the loose reception of the drawbar 15. The yoke piece 17 is sufficiently projected from the drawbar at each side to receive the front ends of the guide rods 18, which are cylindrical pieces of an equal length, and are secured by their front ends in perforations in the yoke piece, as represented in Figs. 5 and 6. The guide rods 18 are so proportioned in length that they may be freely introduced in parallel holes formed for their reception in the transverse sill A, of a car, and pass rearwardly to engage their rear portions with perforations produced in another cross timber B, that is a part of the car frame, and is arranged in parallel with the end sill A. Each guide rod 18 has a fixed collar 18<sup>a</sup> formed on or secured upon it intermediately of its ends, these collars being sufficiently removed from the rear ends of the rods to permit the similar springs 19, to be mounted on the said rods between the collars and cross timber B, the force of said springs being adapted to normally project the yoke piece 17 forwardly, and by pressure of the latter on the drawhead, slide the latter forwardly on the drawbar until the head of the bar and sloped front walls of the abutments *c*, *c*, are in contact, which position of parts serves to remove the arm 12 and toe 14<sup>b</sup> from the end of the drawbar so that the link and hook limb may receive a limited vibration on their supports, this adjustment being represented in Fig. 5. There is a rectangular aperture formed in the end of the sill A, midway between the guide rods 18, for the sliding movement of the drawbar 15, that projects rearwardly of a suitable length, having the same dimensions in cross section as the drawbar portion that occupies the drawhead, and from the rear end of said square body, a drawbar portion 15<sup>c</sup> is prolonged, which is reduced in the diameter of its body as compared to the main part of the drawbar with which it is axially aligned.

The transverse frame timber B is perforated centrally between the guide rods 18, to receive the reduced extension piece 15<sup>c</sup>. Said part has a collar 15<sup>d</sup> secured upon it in front of the timber B, and on the portion that projects behind said timber, a strong spiral spring 20 is mounted, and is retained in enforced contact with the rear face of the timber B, by a collar 15<sup>e</sup> and transverse pin, or by any other suitable means.

The rear end of the link 13, is loosely coupled to one limb of the bell crank 13<sup>a</sup>, that is pivoted on the lower side of the drawhead at the rear of the link, upon one of the bolts 11, so as to permit its other limb to be loosely secured to the front end of a connecting rod 13<sup>b</sup>, which is shackled at its rear end upon the lower side of the drawbar 15, near the reduced extension piece 15<sup>c</sup>, as represented in Figs. 2 and 3; and it will be seen, that when the drawhead is slid rearwardly,

and the locking pin 16 is dropped through the aligned holes in the drawhead and drawbar, the link 13 will be permitted to rock inwardly at its front end, and when the pin is withdrawn the springs 19 will press the yoke piece forwardly and rock the link outwardly at its front end.

The locking pin 16 is afforded a proper length, and at its upper end is loosely shackled to the outer end of an arm 21<sup>a</sup>, which projects from the transverse rock shaft 21, that is rotatably supported upon the end wall of the car C, each end of the shaft being provided with a crank handle 21<sup>b</sup> located at the sides of the car, so that the manipulation of one of the crank handles will afford means to lift the pin 16, when this is necessary.

The operation is as follows: Two cars having the improvement, and opposed on the same railroad track, can be automatically connected by simply shoving the drawheads together, as this impact will vibrate the limbs 14<sup>a</sup> rearwardly from the position shown in Fig. 3, so that the links 13, that by their impinge on the limbs cause their vibration, will assume positions at opposite sides of the approaching drawheads, which will permit the free insertion of the hooks 14 within their front ends, thus interlocking the links and hooks. As the pressure of one drawhead upon the other forces each one rearwardly until the yoke pieces 17 impinge the end sills A of the car frames, this will rock the front ends of the links into the position shown in Figs. 1 and 2, and at the same time permit the pins 16 to drop from the bottom wall of the recess 15<sup>b</sup> in the drawbar into the aligned pin holes of the drawhead sections and the drawbar, which will effectively lock the drawhead in rearward adjustment, and prevent the release of the joined hooks and links, by reason of the contact of the hook toes 14<sup>b</sup> with the front end of the drawbar 15, as before mentioned, and shown in Fig. 6.

If it is desired to release two cars that are coupled with the improved couplings, it is only necessary to manipulate either crank of the rock shaft 21, to effect such a result, as the release of the drawhead from a locked engagement with the drawbar will permit the drawhead to slide forwardly under stress of the springs 19, which will through the bell crank 13<sup>a</sup> and connecting rod 13<sup>b</sup>, throw the link outward at the front end, while the released spring 14<sup>d</sup>, co-acts to effect such a result, so that it will rock the hook limb outwardly and forwardly, ready for recoupling. The spring 20, retains the drawbar 15 in a retracted condition, and affords elasticity to the drawhead when the coupling is subjected to shocks incidental to applied draft strain in service. The perforation of the drawhead sections between the abutments *a*, *b*, as at *c*, affords a pin hole for the coupled attachment of the improved coupling with an ordinary link and pin coupling, as the pin can be dropped through said hole *c* after the elon-

gated link has been inserted in the drawhead throat.

It is claimed for this device, that it is reliable under all the exigencies of rough service, and that the peculiar construction and arrangement of parts render the coupling secure between two cars, while rigidity is avoided, as the play allowed between the drawbar and rear side walls of the channel of the drawhead in which the drawbar is located, together with the knuckle joint produced between the drawhead and yoke piece and slight looseness of the pin 16, permits a limited lateral rocking movement of the drawhead, which enables the device to yield on curves of the railroad, and thus avoids objectionable strain that would occur if such a provision were not made.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. In a car coupling, the combination, with a recessed drawhead, of an arm pivoted in a side slot of the drawhead, a link pivoted upon said arm, and a limbed hook pivoted in a slot at the opposite side of the drawhead, substantially as described.

2. In a car coupling, the combination, with a laterally slotted drawhead, an arm pivoted in one side slot, a link pivoted on the arm, and a limbed hook pivoted in the opposite slot, of a drawbar longitudinally adjustable in the drawhead, substantially as described.

3. In a car coupling, the combination with a drawhead, a supported spring-cushioned device, a longitudinally slidable drawbar and a retractile spring therefor, of an elongated link, an arm pivoted to the link and in one slotted side of the drawhead, and a limbed hook pivoted in an opposite slot of the drawhead, substantially as described.

4. In a car coupling, the combination with a drawhead, and a link and a hook oppositely vibratile on the drawhead, of a slidable drawbar, and a locking pin adapted to engage aligned perforations in the drawhead and drawbar, substantially as described.

5. In a car coupling, the combination with a drawhead, a link and a hook oppositely vibratile at the side of the drawhead, and a supported spring-cushioning device for the drawhead, of an elongated drawbar, a retractile spring therefor, and a locking pin adapted to engage aligned perforations in the drawhead and drawbar, substantially as described.

6. In a car coupling, the combination with a recessed drawhead, a yoke piece therefor, guide rods projected in parallel from the yoke piece, the cushion springs thereon, of a link and a hook vibratile at the side of the drawhead, a longitudinally slidable drawbar within the drawhead, and a vertically adjustable pin adapted to engage aligned perforations in the drawhead and drawbar, substantially as described.

7. In a car coupling, the combination, with a two-part drawhead recessed at its forward

end and separable in a horizontal plane, connecting bolts for the two sections of the drawhead, and a spring-pressed supporting device, of a link having a loose arm pivoted to vibrate in the recess and project at the side of the drawhead, and a limbed hook pivoted in said recess and projected from the opposite side of the drawhead, substantially as described.

8. In a car coupling, the combination, with a slidable drawhead, a spring-cushioning device adapted to support the drawhead, and a spring-retracted slidable drawbar in the drawhead, of a pivoted laterally vibratile link at one side of the drawhead, a hook on an elongated limb and pivoted to laterally vibrate at the opposite side of the drawhead, and a locking pin arranged to detachably retain the front end of the drawbar pressed on the link support and hook, preventing their vibration, substantially as described.

9. In a car coupling, the combination, with a supported spring-cushioned yoke piece, a drawhead arranged to laterally rock in contact with the yoke piece, and a slidable spring-retracted drawbar whereon the drawhead rocks and slides, of a spring-pressed arm vibratile in a side slot of the drawhead, a link pivoted to laterally swing thereon, a hook having an elongated limb and pivoted in an opposite slot in the drawhead, and a spring adapted to throw forward the limb of said hook, substantially as described.

10. In a car coupling, the combination with a drawhead, a laterally vibratile link and a laterally vibratile hook, of a slidable drawbar, and an adjustable device arranged to lock the bar to the drawhead and retain the

hook and link support from vibration, substantially as described.

11. In a car coupling, the combination, with a supported drawhead, a pivoted link arranged to rock with a pivoted arm on one side of the drawhead, a pivoted hook having an elongated limb and projectable from the opposite side of the drawhead, and expansible springs for the hook and link arm, of a supported spring-cushioning device engaging the rear end of the drawhead, a longitudinally elongated vertical pin-hole in the drawhead, a mating hole in the drawbar, a top recess in the bar, forwardly-extended from its pin hole, and a vertically-adjustable locking pin arranged to rest in the recess when the drawhead is uncoupled, and drop into the aligned pin-holes of the head and bar when the device is coupled, substantially as described.

12. In a car coupling, the combination, with a slidable spring-pressed drawhead, a pivoted spring-pressed arm in one side of the drawhead, an elongated link pivoted thereon, and a hook having an elongated limb and pivoted in the opposite side of the drawhead, of a longitudinally slidable spring-retracted drawbar, a locking-key, means to remove the key by manipulation from either side of the car, a bell crank pivoted beneath the drawhead and shackled by one limb to the rear end of the link, and a connecting rod loosely secured by its ends to the other limb of the bell crank and also to the rear part of the drawbar, substantially as described.

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Witnesses:

G. W. HOLMAN,  
DANIEL AGNEW.