

(No Model.)

2 Sheets—Sheet 1.

R. E. GRAY.  
CAR COUPLING.

No. 261,702.

Patented July 25, 1882.

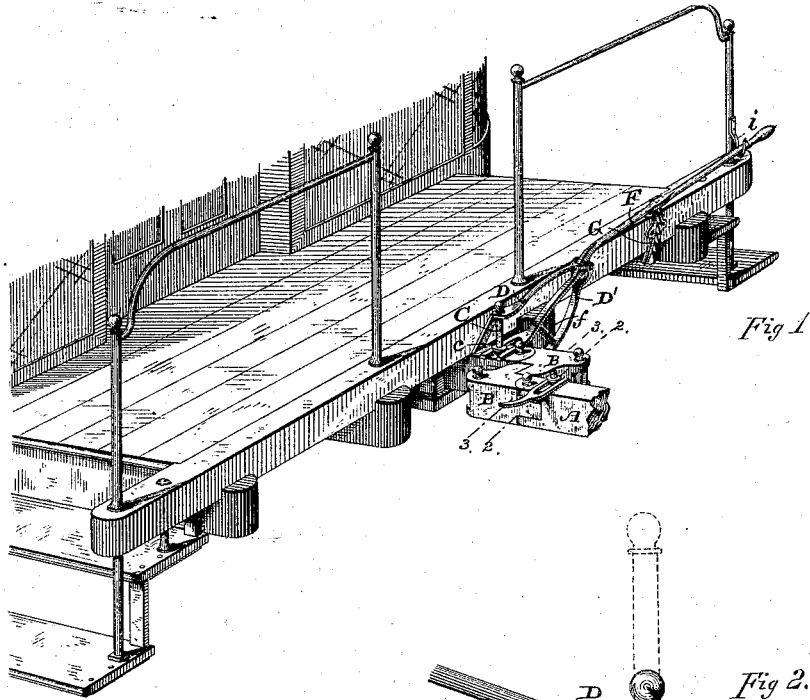


Fig 1.

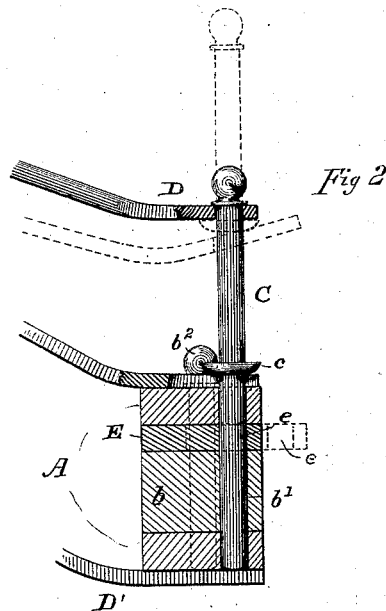


Fig 2.

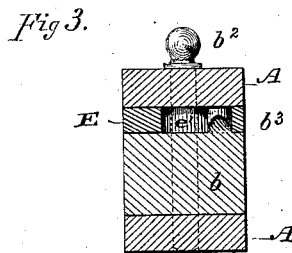


Fig 3.

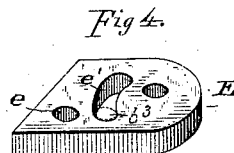


Fig 4.

Witnesses.

Harry King

Wm A. Skunkle

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Richard E. Gray

By his Attorneys

Baldwin, Hopkins & Peyton.

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2 Sheets—Sheet 2.

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*Fig 5.*

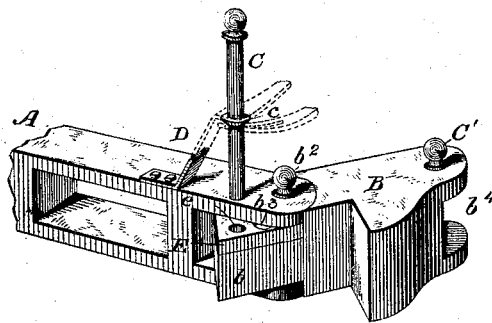
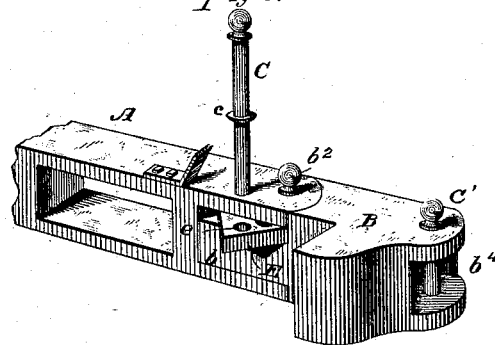
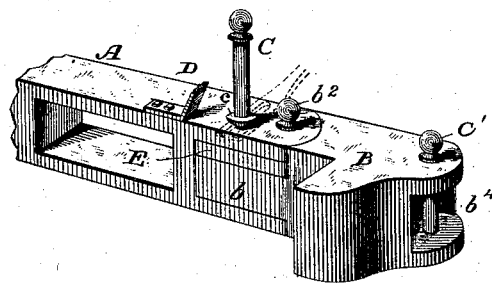


Fig 6.



*Fig 7.*



Witnesses.

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# UNITED STATES PATENT OFFICE.

RICHARD E. GRAY, OF WILLIAMSPORT, PENNSYLVANIA.

## CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 261,702, dated July 25, 1882.

Application filed May 31, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, RICHARD E. GRAY, of Williamsport, in the county of Lycoming and State of Pennsylvania, have invented certain new and useful Improvements in Car-Couplings, of which the following is a specification.

My invention relates to car-couplings of the class known as "twin" couplings, and more especially to that type thereof in which the draw-bars or draw-heads are provided with pivoted hooks to constitute the coupling devices.

The objects of my invention are, first, to improve the pivoted hook-type of coupling by simplifying its construction and by rendering it automatic in its coupling operation while using a simple coupling-pin, so as to avoid the use of spring locking devices; second, to prevent the locking of the coupling-hook by the accidental or unauthorized closing thereof to its coupling position, while insuring its locking when two cars come together to be coupled; and, third, to provide simple and convenient means, extending to the side of the car, for operating or withdrawing the coupling-pin, so as to avoid the necessity of going between the cars or of climbing upon the platform thereof to uncouple them.

The subject-matter claimed is particularly pointed out at the close of the specification.

In the accompanying drawings, which show my improvements as organized and embodied in the best way now known to me, Figure 1 is a perspective view of one end of a car having my improvements applied thereto. Fig. 2 is a transverse section through the coupling devices on the line 2 2 of Fig. 1, and Fig. 3 is a similar section through one of the draw-heads on the line 3 3 of Fig. 1. Fig. 4 is a perspective view of the pivoted latch by which the coupling-pin is upheld in its unlocking position, and which prevents the locking of the coupling-hook by the accidental or unauthorized movement of said hook. Fig. 5 is a perspective view of one of the coupling-hooks thrown back or opened ready for a coupling operation. Fig. 6 is a similar view, showing the coupling-hook as moved inward to its coupling position, but unlocked by reason of the position of the safety catch or latch; and Fig. 7 is a similar view of the coupling-hook and latch moved into position to permit the coupling-pin to descend to lock said hook rigidly to the draw-bar, as will be the case when the cars to be coupled come together.

The draw-bars A A are attached to the ends of the cars in the usual or in any preferred manner. At the outer ends or heads of the respective draw-bars a coupling-hook, B, is pivoted, the shank or reduced rear or inner end, b, of which is fitted so as to move in a recess formed in the draw-head and snugly fit said recess when the hook is in its locking or coupling position, as shown in Figs. 1, 6, and 7.

The shank b of the coupling-hook is provided with a vertical opening, b', to receive a vertically-moving coupling-pin, C, when said hook is in its locking position with its shank moved or swung into its recess in the draw-head. The coupling-pin C, at its upper end, is fitted to move endwise through an opening in a supporting arm or rod, D, projecting above the draw-head, so that said coupling-pin is always guided and supported in a vertical position, said pin being provided with a collar, c, between the rod D and the top of the draw-head, to limit its endwise movement and prevent it from being separated from the coupling, while capable of sufficient vertical movement to permit of the coupling and uncoupling operations.

A latch or catch-plate, E, is fitted in the recess in the draw-head above the coupling-hook shank b, and is pivoted therein, preferably by the same pin b<sup>2</sup> which pivots the coupling-hook. This latch E has a vertical opening, e, near its inner rear corner, which, when the shank of the coupling-hook is swung into its locking position in the recess of the draw-head and the latch is also forced into its seat in said recess, coincides with the opening b' of the coupling-hook shank, and thereby permits the coupling-pin C to fall through said openings by gravity to rigidly lock the coupling-hook to the draw-bar. (See Figs. 2 and 7.) When a coupling is to be effected the coupling-pin C is raised or withdrawn, as shown in Figs. 5 and 6, with its lower end just above the top of the latch E and the coupling-hook B swung outward or backward into the position shown in Fig. 5. This operation causes the shank b of said hook to move inward into the path of the front end or nose of the coupling-hook of the opposite car, the latch E being likewise also caused to move inward into the path of

said opposing coupling-hook by reason of a lug,  $b^2$ , on the upper surface of the hook-shank  $b$ , which fits and slides in a concentric slot,  $e'$ , in said latch, clearly shown in Fig. 4, the said lug  $b^2$  of the coupling-hook coming against the shoulder formed by the inner end of said eccentric slot, as shown in dotted lines, Fig. 4. The coupling-pin C, therefore, is upheld by the flat surface of the latch E back of its vertical opening  $e$ , (while ready to fall automatically at the proper time,) and cannot descend in order to lock the coupling-hook B in its coupling position until said latch has been moved inward, so as to bring its opening  $e$  directly under the coupling-pin coincidently with the vertical opening of the coupling-hook.

Should the coupling-hook B, while swung or moved into the position ready to make a coupling, be swung or moved inward accidentally, mischievously, maliciously, or without authority, it will be obvious that the coupling-pin cannot descend to lock the coupling-hook in its locking position, because a solid portion of the latch E will be interposed between the coupling-pin and the vertical opening of the hook. This interposition of the latch E to uphold the coupling-pin is due to the fact that when the shank of the coupling-hook is swung inward into its seat or recess in the draw-bar the movement has no effect upon the latch, inasmuch as the lug  $b^2$  on the hook-shank  $b$  is free to move in the concentric slot  $e'$  of said latch. Therefore when the coupling-hook of an approaching car comes in contact with the accidentally-closed hook the latter hook yields or rocks readily on its pivot to permit the head of the approaching hook to pass its front end and come in contact with its inwardly-projecting shank  $b$  and with latch E, so as to force both said shank and said latch into the recess of the draw-head, and thereby permit the coupling-pin to automatically descend to lock the hook in its locking position, with the heads of the two hooks engaged, as shown in Fig. 1, and thus effect a secure coupling between the cars.

It is obvious that were it not for the latch E any accidental or unauthorized movement of the coupling-hook, so as to carry its shank into the draw-head recess, would permit the coupling-pin to descend and rigidly lock the hook to the draw-bar. Consequently, should both coupling-hooks of approaching cars be locked, there would be no yielding of the coupling to permit the hooks to pass each other, and no coupling would be effected, while injury might result.

The operation of coupling obviously is automatically effected by the inwardly-projecting shank or shanks of one or both of the opposing coupling-hooks being struck by the hooks coming together, so as to force the heads of said coupling-hooks to interlock, at which time the coupling pin or pins fall, effecting the coupling.

By the construction described it will be seen that I have provided a twin coupling employ-

ing pivoted hooks, by which the coupling operation is automatically effected with the use of simple coupling-pins, and that I consequently dispense with spring-levers, sliding blocks, and similar objectionable devices heretofore employed for automatic coupling with pivoted hooks.

In the heads of the pivoted hooks B are preferably formed recesses  $b^4$ , to receive the coupling-links in common use for coupling cars, a pin, C', passing vertically downward across this recess to secure the link to the hook. A car with my improved coupling can therefore be readily connected to a car having the coupling-link-and-pin arrangement in common use.

As before stated, the coupling-pin C of my improved coupling is limited in its downward movement by a collar or shoulder,  $c$ , which supports the pin in its lowermost and locking position by resting upon the upper side of the draw-bar, while said collar limits the upward movement of the pin by abutting against the under surface of the arm or rod D, through which the pin moves endwise.

In order to readily raise the coupling-pin C from the side of the car, so as to avoid the necessity of going between the cars or climbing on the platform to uncouple, I employ a lever, F, pivoted at the outer end of a forked frame, D', constituting an extension of the arm D, before mentioned, the inner end of the lower member of said forked frame being fastened to the under side of the draw-bar or platform, thereby making a rigid support. The shoulder  $c$  on the coupling-pin rests in the forked end of the lever F, so that by raising or lowering the outer end of said lever the position of the pin may be determined. A spring,  $f$ , acts upon the lever to normally maintain its forked inner end down upon the top of the draw-bar, so as to permit the coupling-pin to freely descend when a coupling is to be effected. In order to enable the lever to uphold said coupling-pin, so as to prevent a coupling upon the coming together of two cars, and thereby avoid injury or strain, which might occur if the coupling-hook were in its locked position, I provide a segmental rack, G, fastened upon the end of the car or its platform, with the teeth of which the lever may be made to engage at any point in its range of movement, as will be clearly obvious on inspection of Fig. 1. The outer end of the lever-arm normally lies in the hook  $i$ , shown in Fig. 1.

The principal advantages of my improved coupling are its simplicity of construction, which presents less liability to injury, its solidity and strength, its automatic operation in coupling with pivoted hooks without the use of springs, and the avoidance of danger or injury to the coupling by the accidental or unauthorized movements of one or both of the coupling-hooks.

I claim as my invention—

1. The combination of the draw-bar, the pivoted hook-coupling device thereof, the coupling-pin, and a guide or support for said pin above said coupling-hook, so as to permit said

pin to automatically lock said coupling-hook to the draw-bar when in its coupling position, substantially as described.

2. The combination, substantially as herein-  
5 before set forth, of the draw-bar, the pivoted hook-coupling device thereof, the coupling-pin, the guide or support for said pin above said coupling-hook, so as to permit said pin to automatically lock said coupling-hook to the  
10 draw-bar when in its coupling position, and mechanism, substantially as described, extending to the side of the car to raise said pin to uncouple the cars.

3. The combination, substantially as herein-  
15 before set forth, of the draw-bar, the pivoted hook-coupling device thereof, the coupling-pin, and the latch to uphold said pin to prevent the coupling-hook being locked by an accidental or unauthorized movement of said hook.

20 4. The combination, substantially as herein- before set forth, of the draw-bar, the pivoted hook-coupling device thereof, the coupling-pin,

the latch to uphold said pin, and a pivot common to said coupling device and said latch.

5. The improved twin coupling hereinbefore 25 described, consisting of the combination of the draw-bars, the pivoted hooks thereof, the coupling-pins, and the latches to uphold said pins.

6. The combination, substantially as herein- before set forth, of a draw-bar and its coupling 30 devices, an arm or bar constituting a guide for the vertically-moving coupling-pin of said coupling devices, a forked frame, one of the members of which is fastened above and the other below said draw-bar, and a lever extend- 35 ing to the side of the car, having its fulcrum in said forked frame and connected with the coupling-pin to raise it.

In testimony whereof I have hereunto subscribed my name.

RICHARD E. GRAY.

Witnesses:

J. C. HILL,

CHAS. L. EYER.