

(No Model.)

H. J. DAVIS.

3 Sheets—Sheet 1.

No. 346,026.

Patented July 20, 1886.

Fig. 1.

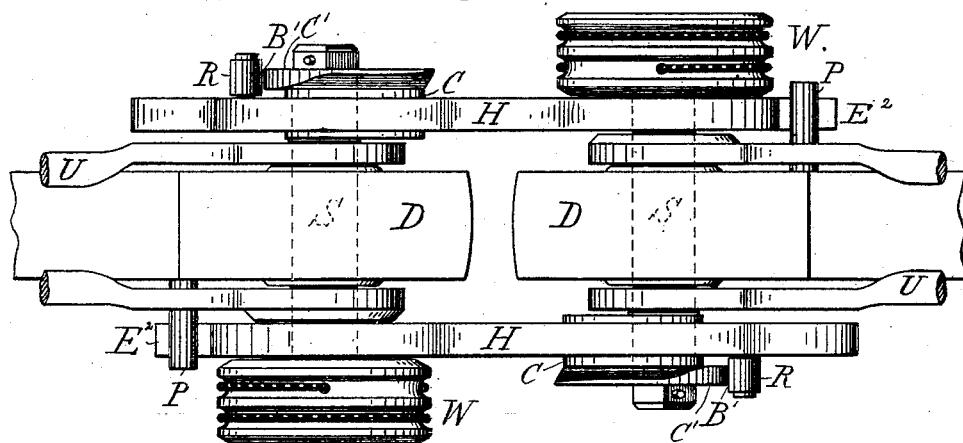


Fig. 2.

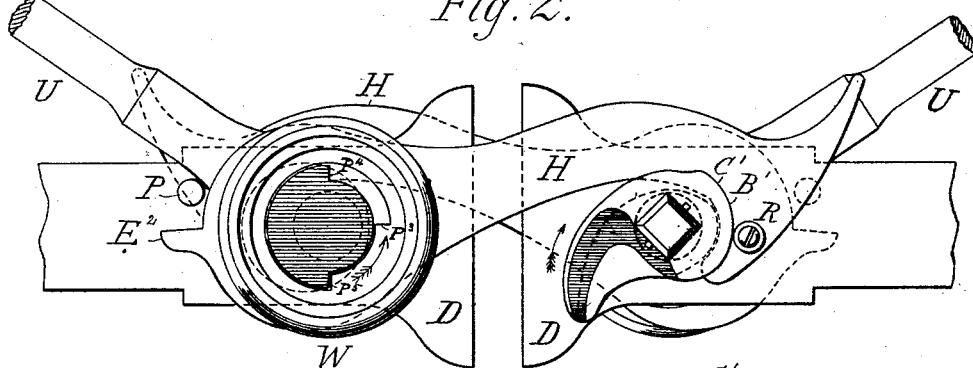


Fig. 6.

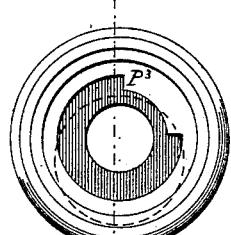


Fig. 4.

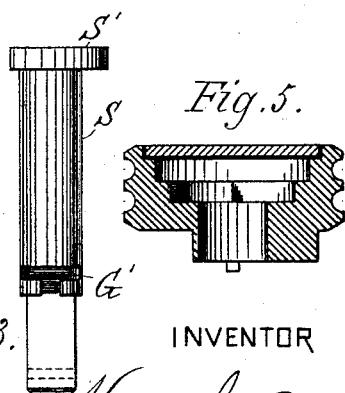


Fig. 5.

**WITNESSES**

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**INVENTOR**

Henry J. Davis

(No Model.)

3 Sheets—Sheet 2.

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CAR COUPLING.

No. 346,026.

Patented July 20, 1886.

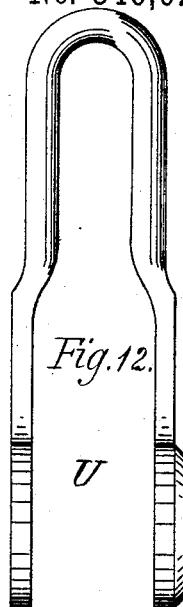


Fig. 8.

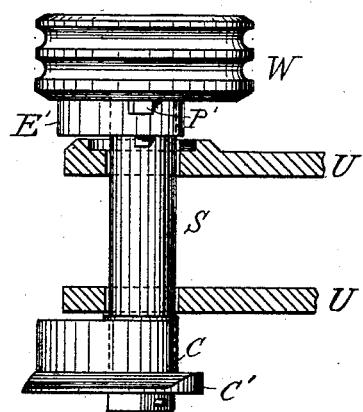


Fig. 7.

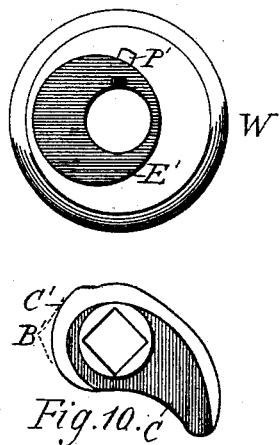


Fig. 10.c

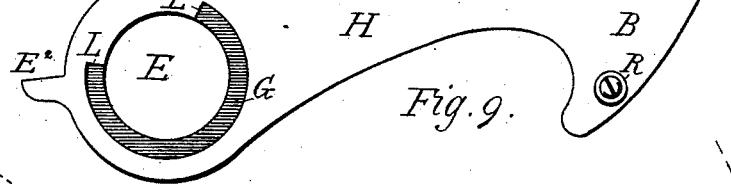


Fig. 9.

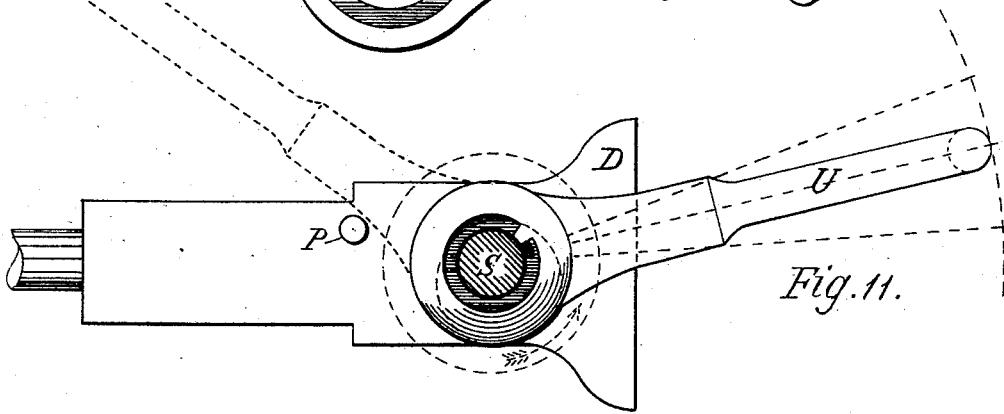
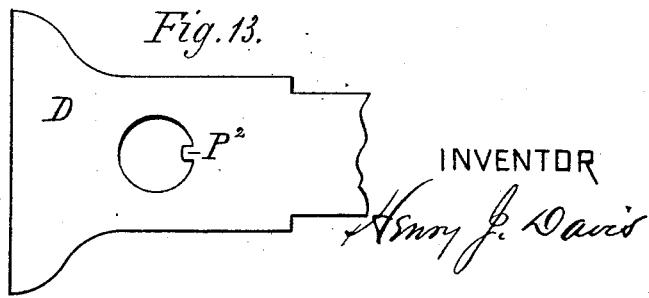


Fig. 11.

Fig. 13.



WITNESSES

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INVENTOR

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(No Model.)

3 Sheets—Sheet 3.

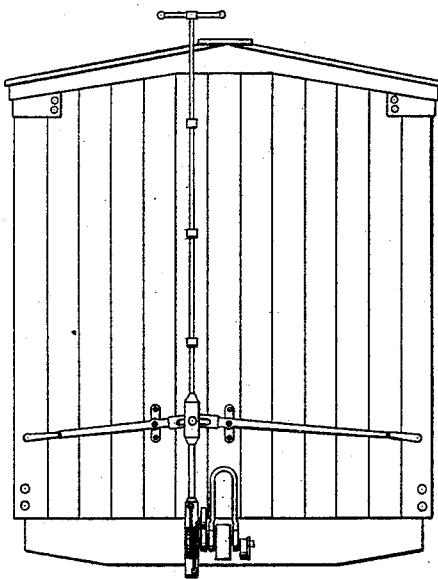
H. J. DAVIS.

CAR COUPLING.

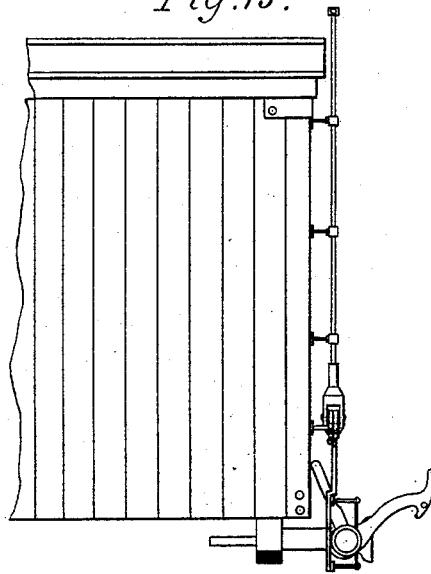
No. 346,026.

Patented July 20, 1886.

*Fig. 14.*



*Fig. 15.*



WITNESSES

*Wm. A. Lowe*  
*James A. Stilton*

INVENTOR

*Henry J. Davis*

# UNITED STATES PATENT OFFICE.

HENRY J. DAVIS, OF BROOKLYN, NEW YORK, ASSIGNOR OF ONE-HALF TO  
EDWARD J. WINSLOW, OF SAME PLACE.

## CAR-COUPING.

SPECIFICATION forming part of Letters Patent No. 346,026, dated July 20, 1886.

Application filed January 27, 1885. Serial No. 154,116. (No model.)

*To all whom it may concern:*

Be it known that I, HENRY J. DAVIS, a citizen of the United States, residing at No. 352 Halsey street, in the city of Brooklyn, county of Kings, and State of New York, have invented a new and useful Improvement in Car-Couplings, (for which I have obtained no foreign patent whatever,) of which the following is a specification.

10 My invention relates to improvements in car-couplers in which permanently-attached hooks or loop-links are used, in combination with engaging-cams, for automatic engagement and for disengagement from either car; and it consists 15 in certain devices and combinations of devices for operating the hook in the cam, and also in the devices for operating the engaging-cam, all of these for the purposes of making the engagement, as well as of effecting disengagement.

20 I attain the objects of my invention by the mechanism illustrated in the accompanying drawings, in which similar letters refer to similar parts.

Figure 1 is a top view showing two draw-heads with associated parts engaged. Fig. 2 is a side view of the same. Fig. 3 is a side view of the shaft. Fig. 4 is an end view of that end of the shaft which carries the cam. Fig. 5 is a sectional view of the combined 30 parts related to the eccentric, and the associated parts in the position shown in W, Fig. 8. Fig. 6 is a plan view of the recess in the same. Fig. 7 is an end view of the eccentric. Fig. 8 is a view of the eccentric, shaft, cam, 35 and part of a loop-link. Fig. 9 is one view of the hook. Fig. 10 is a plan view of the cam. Fig. 11 is a view of the loop-link, shaft, and the devices for operating the link. Fig. 12 is a plan view of the loop-link. Fig. 13 is a view 40 of the journal or bearing of the shaft and lug therein, and Figs. 14 and 15 are views of the end of a car and the devices for operating the coupler.

Similar letters refer to similar parts throughout the several views.

In a previous application I provided a roller-bearing located upon the draw-head, so as to receive and support the hook for the purpose of preventing its dropping too low to effect 50 engagement with the adjacent car. In this invention that roller-bearing is omitted, and

instead thereof I provide a pin, P, secured in the draw-head back of the shaft which supports and operates the hook, with which a rear extension, E<sup>2</sup>, of the hook H comes in 55 contact, so as to prevent the dropping of the front end of the hook.

Adjacent to the eye E of the hook H, I provide a groove or recess, G, annular in shape, but not completely surrounding the eye E, or 60 some equivalent device, and also upon the same part of the eccentric E, adjacent thereto, I locate a stud or pin, P', which moves in the groove G between the shoulders L L', terminating it. I further modify the original hook 55 by placing upon its forward end, or near its bill, a roller, R, secured by a pin laterally, or its equivalent. By means of the groove G adjacent to the eye E, and the pin P' on or adjacent to the eccentric, I am able, through the 70 chain-wheel W, to lift the hook H nearly or quite to a vertical position by causing the pin P' to strike the shoulder L in the groove G, and the hook H may still be moved up and down as required to make engagement, disengagement, or be thrown up out of the way. 75 The extension E<sup>2</sup> on the hook H should be made long enough to permit the forward and backward movements of the hook H, under the control of the eccentric E', without disengagement, except when the hook turns on its shaft S, or, rather, on its eccentric.

The cam C in this invention differs from that shown in the previous application referred to in several respects, as follows: It is a double or 85 compound cam, and acts in combination with the bill of the hook B, and also with the roller R on the side of the bill of the hook. The main cam (that which receives and acts upon the bill of the hook) has its front face elongated, 90 so as to receive the face of the bill of the hook and effect engagement automatically, and on its rear side the contour of the cam is such that when the front of the cam is lifted by means of its shaft and the chain-wheel W upon 95 its other end it will fall in or away from the bill of the hook, and the subordinate or second cam, C', is so shaped as to present to the roller R a portion, B', of the cam C', which projects beyond the contour of the rest of the cam C, 100 so as to strike the roller R and take the strain as the retreating part of the cam C clears or

leaves the bill of the hook, as previously stated. The upward motion of the cam C, carrying with it the cam C', being continued through the shaft S and wheel W, the roller R continues to receive the strain until the forward end of the cam C strikes the under side of its engaging-hook H, the effect of the continued motion of the cam C being to raise the hook H and its bill, the roller R still continuing to ride for a time upon the edge of the cam C', until the hook is lifted far enough to permit the entire disengagement of the hook and cam by the slipping of the bill of the former over the surface of the latter. The point at which this disengagement will occur is fixed by the coincident effect and operation of the chain-wheel W, eccentric E', and pin P' upon their hook H, and their cams C and C' upon the hook of the opposite ear and draw-head, to lift the forward end of that hook from engagement with such double cams C and C'. I employ the eccentric E', operating in the eye E, to move the hook, and for operating the shaft S a projection, P<sup>2</sup>, in or on the eccentric, and projections P<sup>1</sup> P<sup>3</sup> on the shaft S; but for the purpose of controlling the movements of the double cam C C' within requisite limits, and at the same time making its movements positive, I place a stud or pin, P<sup>2</sup>, on the inside of the journal or shaft-bearing in the solid draw-head, and I also channel the shaft S, as shown in Fig. 3, in such a way that when the shaft is put in position the pin P<sup>2</sup> will pass into the segmental groove G'. The segment of the groove G' is of such length only as to allow the double cam C C', when secured to the shaft S, to drop to the proper position for receiving the bill of the opposite hook, H, of the adjacent car in making automatic engagement, where it is held by the resistance of the pin P<sup>2</sup>, which brings up against the end of the segmental groove G', so as to prevent further downward motion of the cam, and by a positive resistance to cause the bill of the hook to ride up and over the cam, and thereby effect automatic engagement by dropping its bill behind it. The pin P<sup>2</sup>, by striking the opposite or other end or shoulder of the segmental groove G', when the double cam C C' is elevated, also limits the motion of the cam when lifted for the purpose of disengaging its own engaging-hook, in the manner previously described.

When it is desired to use the loop-link U instead of the hooks H for coupling, the loop-link, being the same, is also operated in the same manner shown in the previous application, the hooks H being thrown up out of the way for the time being.

In operating the hook H in the manner and for the purposes described, I move the chain-wheel W backward, thereby causing the eccentric E to move downward over the quadrant of a circle, carrying with it the rear end of the hook H, and at the same time moving it forward, and during its movement over the next quadrant of a circle causing the pin P'

in the groove G to lift the forward end of the hook H by striking against the shoulder L, the hook H turning at the same time upon its axis and clearing its extension E<sup>2</sup> from the pin P. Coincidently with this movement of the wheel W and its hook H the double cam C C' on the same shaft will be moved so as to take the entire strain upon its own engaging-hook through the roller R and the cam C', as described. The purpose of this arrangement for taking the strain upon the opposite hook and cam is to relieve the tension of the hook H, which is adjacent to the wheel W, and which is being manipulated, so that its forward movement will be made without any change in the relative positions of the cars, the draw-heads and their attachments, particularly the double cam, and far enough to permit the bill of the hook H and the roller R to be lifted clear of the cams C C' and disengaged therefrom while the tension is still upon the opposite cam, C', and roller R of the opposite hook. The bill of the hook H and the roller R may be lifted and disengaged from their respective cams C and C', in the manner described, through the wheel W and associated devices, since the forward projection of the hook H is arranged to be sufficient to lift the bill and the roller clear without contact with either part of the double cam C C'. The final act of coupling is effected by means of the cam C and the roller R while they are in action, or at the end of their action, and takes place when the roller R passes from the point of greater eccentricity on the cam C' toward or upon the points of lesser eccentricity forward of the point B', at which it takes and sustains the full stress when the opposite hook, H, is moved forward, or after the opposite hook has been lifted from its cam. Of course, the roller R relieves friction and permits the movement of the cam C' through or by means of the shaft S and wheel W, which otherwise it would be difficult to effect while the strain and friction of the coupled condition are upon the parts, without the intervention of any anti-friction devices.

The lip-cam of the previous application is omitted, its releasing or lifting function being performed by the nose or forward end of the cam C, which is moved also in an opposite direction for the purpose.

My object in omitting the roller-bearing of the previous application is to allow the rear end of the hook H to be lowered by the backward and downward movement of the eccentric E, which the pin P, located in the draw-head back of the shaft and above the extension E, permits, while it prevents too great depression of the front end of the hook H as far as may be necessary, yet without interfering with the elevation or other necessary motion of the hook, whereas when located in front of the eye E, beneath and in close contact with the hook H, the bearing does more or less interfere with or render difficult the

forward as well as downward motion of the hook. The projection  $P^3$  in or on the eccentric  $E$  is disposed in such relations to the shoulders  $P^4$  and  $P^5$  on the shaft-head  $S$  as to control the movements of the shaft  $S$  in harmony with those of the eccentric, and also in harmony with those of the cams  $C$  and  $C'$ , as set forth, and for the purposes described.

Figs. 14 and 15 show the mechanism whereby the coupler can be operated from either side or from the top of the car without endangering the brakeman or coupler.

I am aware of the inventions shown in Letters Patent to Rice and Coup, No. 304,078, dated August 26, 1884; in my own pending application, No. 150,711, filed December 19, 1884, and in Letters Patent of O'Donovan, No. 290,097, dated December 11, 1883; and I hereby disclaim the same, but without prejudice to any existing right to claim my own invention, as distinguished therefrom and shown herein.

I claim as my invention—

1. A hook,  $H$ , provided with a groove,  $G$ , in combination with the pin  $P$  and stop  $L$ ; or their equivalents.

2. The double or compound cam  $C C'$ , in combination with the hook  $H$  and roller  $R$ .

3. The hook  $H$ , provided with an extension,  $E^2$ , in combination with the stop  $P$ , and also provided with the eye  $E$ , in combination with the eccentric  $E'$ , the whole in combination with the movable cam  $C$ , as and for the purposes set forth.

4. The shaft  $S$ , provided with the groove  $G'$ , in combination with a stop,  $P^2$ , for the purpose of controlling and limiting the movements of the double cam  $C C'$ .

5. The hook  $H$ , provided with the eye  $E$ , groove  $G$ , and with an additional bearing,  $R$ , on or adjacent to the bill of the hook.

6. A hook provided with an additional bearing on or near the bill of the hook, for the purpose of engaging a double cam, substantially as shown and described.

7. A combined wheel and eccentric having in or on the same a projection,  $P'$ , in combination with the projections  $P^4$  and  $P^5$  on a shaft,  $S$ , or shaft-head  $S'$ , provided with the segmental groove  $G$ , and moving an engaging and releasing cam, substantially as shown and described.

8. A car draw-head to which is secured a hook,  $H$ , having an eye,  $E$ , and an additional bearing on or adjacent to the bill of the hook, and a shaft having a shaft-head with two opposite shoulders or projections on one end, and carrying on the other an engaging and disengaging cam, the shaft having the limited movement for both moving and controlling the cams, all these parts arranged so as to combine and co-operate with a duplicate or duplicates of the same upon an adjoining car, for the purpose of coupling and uncoupling the two cars.

HENRY J. DAVIS.

Witnesses:

E. J. WINSLOW,  
JAMES A. SKILTON.