No. 629,497. Patented July 25, 1899.

P. C. EWART.

CAR COUPLING.

(Application filed Mar. 9, 1896.)

(No Model.) 3 Sheets—Sheet 1.

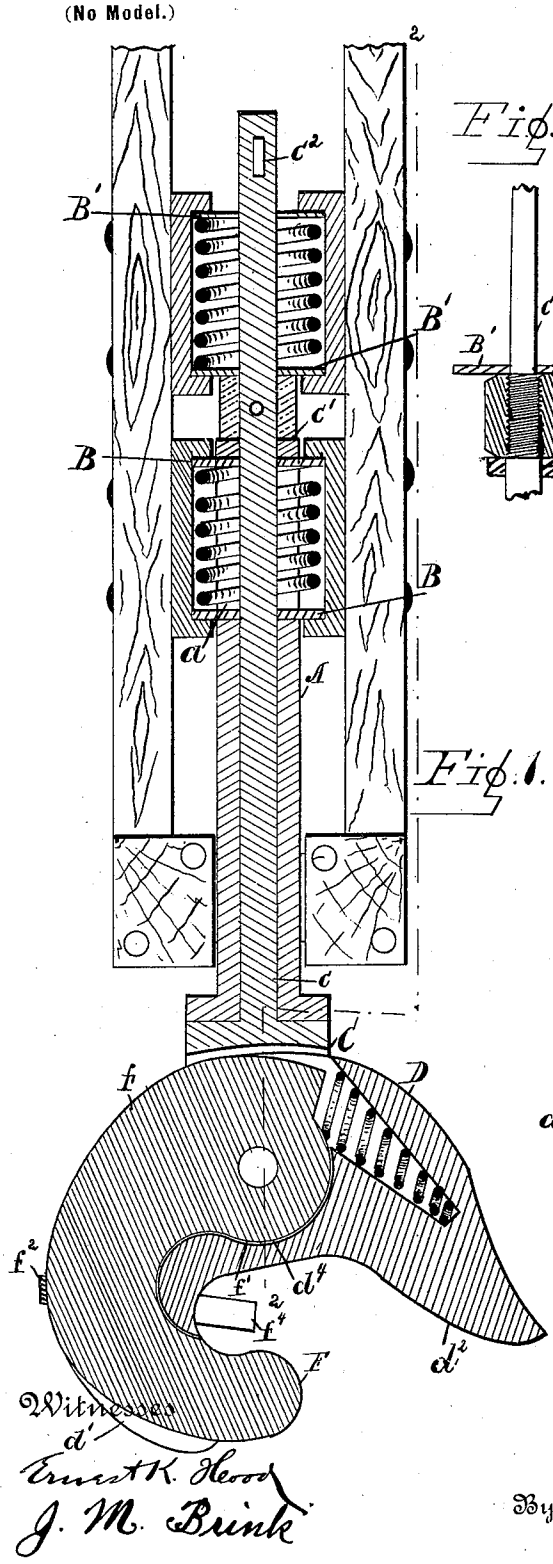


Fig. 1.

Fig. 3.

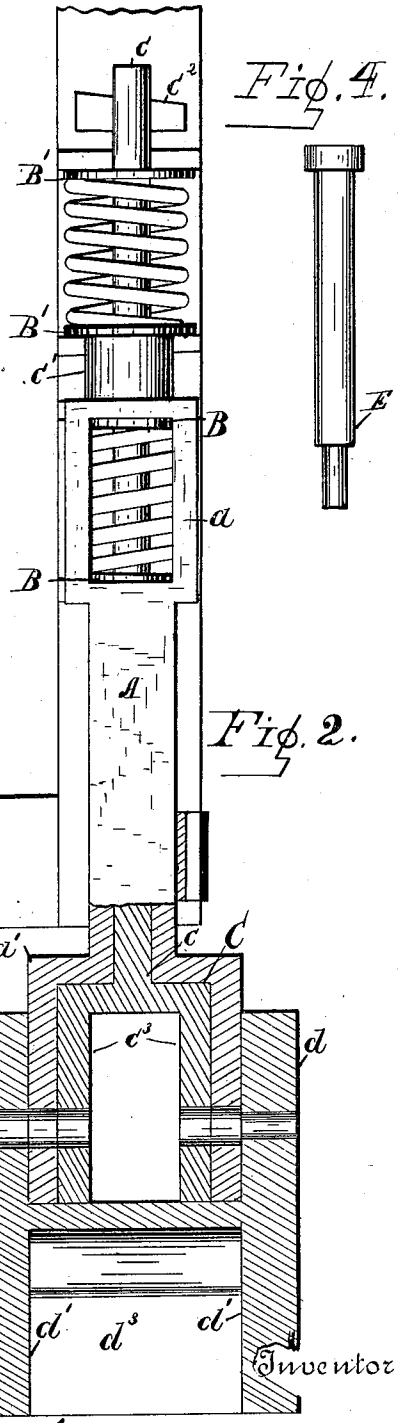


Fig. 2.

Fig. 4.

Witnesses:
d'
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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

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Fig. 5.

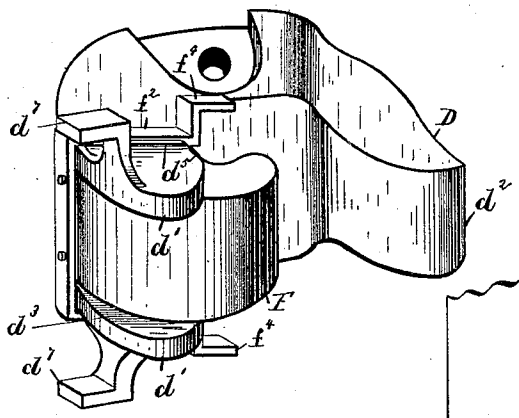
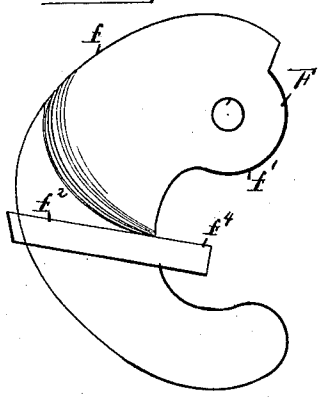


Fig. 6.



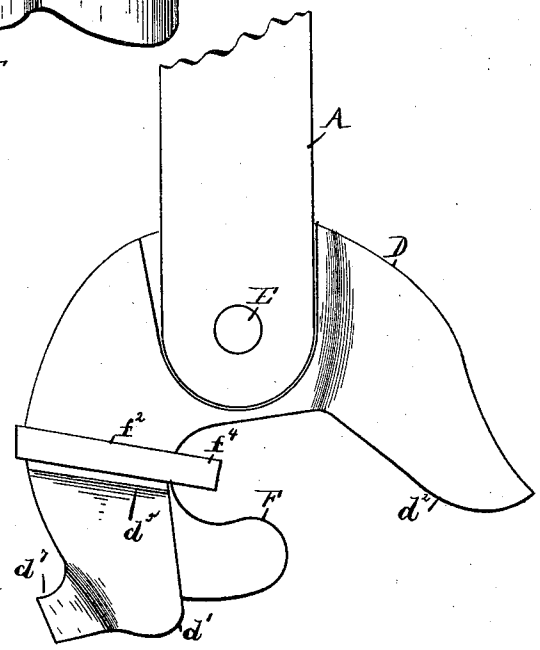


Fig. 7.

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CAR COUPLING.

(Application filed Mar. 9, 1896.)

(No Model.) 3 Sheets—Sheet 3.

Fig. 8.

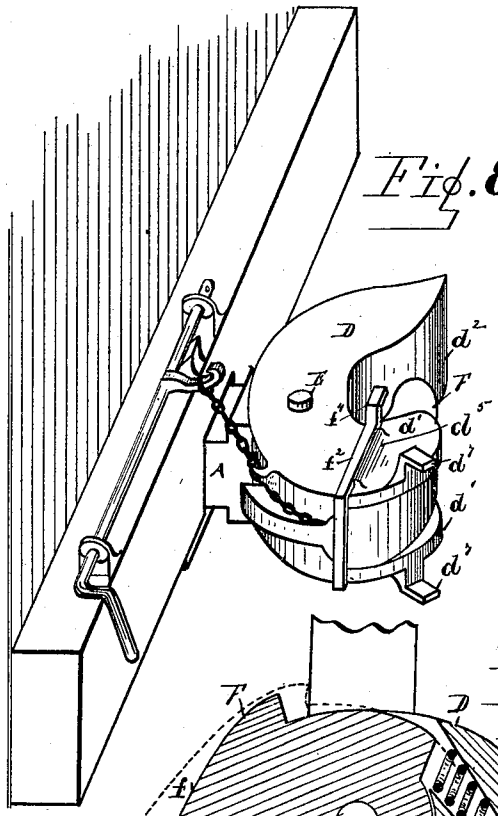


Fig. 9.

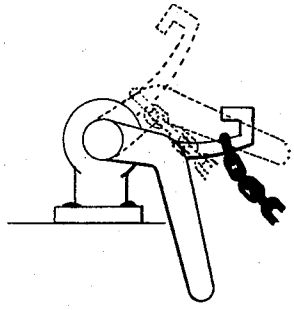
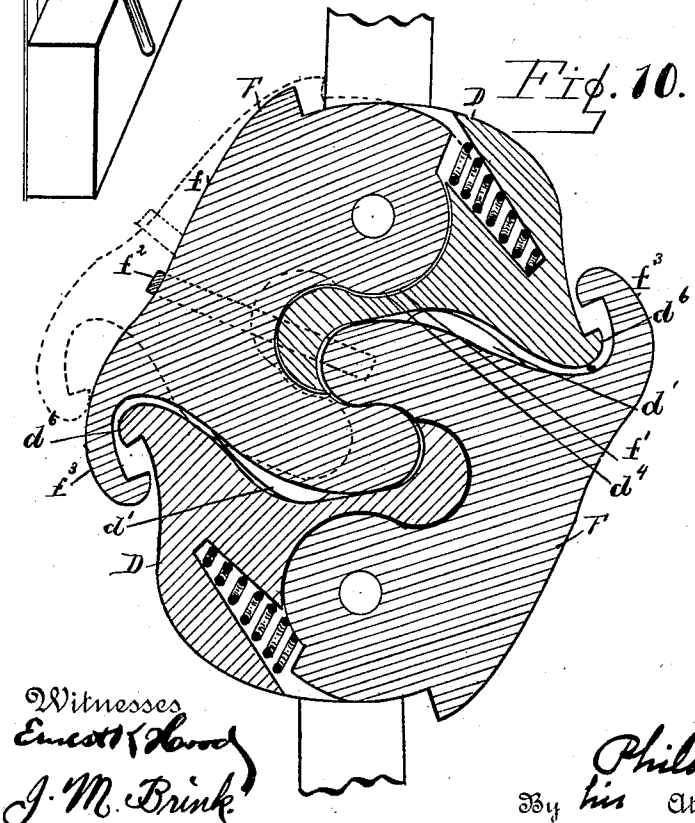


Fig. 10.



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UNITED STATES PATENT OFFICE.

PHILO C. EWART, OF CINCINNATI, OHIO, ASSIGNOR OF ONE-HALF TO CHARLES A. BARNARD, OF CLEVELAND, OHIO.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 629,497, dated July 25, 1899.

Application filed March 9, 1896. Serial No. 582,368. (No model.)

To all whom it may concern:

Be it known that I, PHILO C. EWART, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Car-Couplers, of which the following is a specification.

The object of my invention is to provide a series of safeguards whereby the coupling connection will be maintained and the several parts will be retained in position in case of breakage or disabling of parts; and my invention consists in means for maintaining the coupling engagement between the cars in case the draw-stem or draft-rod breaks or becomes disabled; means for retaining the couplers in operative engagement in case a coupling-hook should break; means for retaining the couplers in operative engagement in case the swivel-pin should break; means for retaining the swivel-pin in position if broken, and thereby preventing the head or hook from being detached from the stem; means for preventing the draw-stem and coupling-head from falling in case either becomes disabled by breakage or otherwise, and means for holding either coupler-head or draw-stem from falling to the track and wrecking the train if broken or pulled out of the car, whether the opposing coupler be provided with a corresponding safety device or not.

I have illustrated my invention as applied to the type of couplers described and claimed in Letters Patent of the United States No. 553,706, granted to me January 28, 1896.

In the drawings, Figure 1 is a sectional plan; Fig. 2, a partial section on line 2 2 of Fig. 1, one of the draft-timbers being removed; Fig. 3, a detail of the draw-stem nut; Fig. 4, an elevation of the pin; Fig. 5, a perspective view of the head and hook; Fig. 6, a plan of the hook; Fig. 7, a plan of the head, hook, and stem; Fig. 8, a perspective view of the coupler supported on the end of a car; Fig. 9, a detail of the hook-operating device, and Fig. 10 a sectional plan of a coupling-head with a supplemental hook.

A is a hollow draw-bar stem attached at one end to the coupling-head and provided at the other end with a pocket a, embracing followers B, which engage with the draft-jaws of a car in the ordinary manner.

C is a draft-rod having a stem c, taking through the draw-bar stem and its pocket a and provided with a nut c' or other engaging element in the rear thereof and taking through a second pair of followers B', engaging with a second pair of draft-jaws, and provided with a key c^2 or other element adapted to engage with the rear followers. Both sets of followers are equipped with springs in the usual manner. The draft-rod is preferably so connected with the second set of followers as not to subject them to any considerable pulling strain while the first set of followers is performing its normal function, but in case of pulling out or rupture of the draw-stem or first set of followers to take up the pulling strain without detrimental loss of motion. When thus arranged, the spring of the rear followers serves as a supplemental buffer-spring for the stem, but does not serve to neutralize the elasticity of the main buffer-spring when subjected to a pulling strain. The draft-rod is preferably attached to the coupling-head, but a material portion of the advantages of this construction may be attained by securing the pull-pin to the draw-bar stem.

D is a coupling-head which may be rigid with the stem, but is preferably pivotally connected with both stem and pull-pin in such manner as to permit of a limited swinging motion relatively thereto. In the form shown the stem, draft-rod, and head are provided with interlocking elements a', c^3, and d, having apertures adapted to receive a swivel-pin E. The coupling-head in the form shown has hook-guards d' and a guide-arm d^2, preferably narrowed or reduced vertically at its free end.

F is a coupling-hook pivotally secured to the swivel-pin E and adapted to swing between the hook-guards. The swivel-pin is preferably made with its lower end smaller than its upper portion, and the lower aperture in the interlocking elements is made correspondingly smaller, so that the pin will be retained in position if broken or sheared off and will still hold the head in connection with the stem and draft-rod. The coupling-

hook preferably swings outwardly from the head, and the head and the shank of the hook are so formed as to interlock in case of breakage of the swivel-pin, thereby maintaining the coupling connection. This interlocking may be effected in several ways. The shank of the hook may be so formed as to partially embrace the rear of the head, the curve or angle being sufficient to insure a hooking or pulling contact with the head if the swivel-pin should give way, or the shank may be provided with an extension or projection beyond its pivotal point adapted to engage with an abutment upon the head or stem, thereby limiting the closing movement of the hook, and consequently the outward movement of the hook-sbank, or the hook-shank may be provided with a boss adapted to take into a corresponding recess in the rear wall of the head, or the hook may be provided with one or more projections adapted to engage with a shoulder or stop upon the head; but for the sake of greater security I prefer to provide for interlocking at two or more points. In the form shown the shank f of the coupling-hook is curved to partially embrace the rear of the head and is adapted to swing in a recess or guideway d^3 in the side and rear wall of the head. The inner wall of this recess limits the closing movement of the hook. The rear wall of the head is also provided with a supplemental recess or socket d^4, adapted to receive a corresponding boss or projection f' upon the hook-shank. It will be seen that in case of breakage of the pin upon which the coupling-hook is pivoted, so as to release the hook from its pivot, the hook will immediately make a hooking or pulling contact with the coupling-head, and as the jaw of the hook cannot swing inwardly substantially beyond its normal position of engagement the coupling-hook will be retained in engagement with the head and the coupling maintained.

To guard against uncoupling by the possible rupture of the hook-shank between its pivotal point and the coupling-jaw, the shank is provided at a point near the jaw with one or more projections f^2, adapted in case of rupture of the swivel-pin or hook-shank to engage with a stop or stops d^5 upon the coupling-head and maintain the coupling engagement. In the form shown these projections consist of a yoke-shaped piece of metal secured to the shank of the hook and embracing the forward part of the draw-head. This form is preferred because of its adaptability to extension for a purpose hereinafter described.

To guard against uncoupling by reason of the rupture of the engaging part or jaw of the coupling-hook, the shank of the hook is provided with a supplemental jaw f^3, extending forwardly and adapted to swing into a position of engagement with a jaw d^6 on the guide-arm of an opposing coupler.

It will be seen that I have provided for maintaining the coupling if the draw-bar stem breaks, if the swivel-pin breaks, if the shank of the coupling-hook breaks, if the jaw of the coupling-hook breaks, and if all these parts should be ruptured at once.

To prevent the head or stem, or both, from falling, and thereby wrecking the train, in case of a shock so severe as to totally disrupt the element or elements connecting the coupling-head with its car, the coupling-head is provided with one or more projections adapted to take over or under a portion of the opposing coupler or both over and under. If the opposing coupler is provided with an equivalent safety device, a single projection extending either over or under a portion of the opposing coupler will serve the purpose; but by providing projections extending both over and under the coupler so equipped will not only be held from falling if its connection with the car is disrupted, but will hold the opposing coupler from falling if its connection with its car be broken irrespective of whether the opposing coupler be equipped with an equivalent device. These projections may extend from the coupling-hook, the hook-guards, or other portion of the coupler. I have shown one pair of projections f^4 extending inwardly from the hook-shank as extensions of the projection f^2 and adapted to embrace the hook of the opposing coupler when in engagement and another pair d^7 extending upwardly and forwardly from the hook-guards to embrace the guide-arm of an opposing coupler.

I am aware that it has been proposed to provide a coupler with a pocket of considerable size and extend and reduce the end of one of the arms to adapt it to enter the pocket of an opposing coupler. This involves a special construction for both couplers and is useless with other forms of couplers, and I make no claim to such construction.

I claim as my invention—

1. The combination, in a car-coupling, of a draft-stem, a draft-rod secured to the car, and a coupling-head pivotally connected with the draft-stem and draft-rod, substantially as and for the purpose set forth.

2. In a car-coupling, the combination with a coupling-head, of a draft-stem and a draft-rod, independently connected with the car and the coupling-head, substantially as and for the purpose set forth.

3. In a car-coupling, the combination of a draft-stem and a draft-rod independently secured to the car and a coupling-head pivotally connected with the draft-stem and draft-rod, substantially as and for the purpose set forth.

4. In a car-coupling, the combination of a draft-stem connected with a draft-spring, a draft-rod independently connected with the car, and a coupling-head independently connected with the draft-stem and draft-rod, substantially as and for the purpose set forth.

5. In a car-coupling, the combination of a draft-stem connected with a draft-spring, a draft-rod independently connected with the

car and a coupling-head pivotally connected with the draft-stem and draft-rod, substantially as and for the purpose set forth.

6. In a car-coupling, the combination of a draft-stem connected with a draft-spring, a draft-rod connected with another draft-spring and a coupling-head independently connected with the draft-stem and draft-rod, substantially as and for the purpose set forth.

7. In a car-coupling, the combination of a draft-stem connected with a draft-spring, a draft-rod connected with another draft-spring and a coupling-head pivotally connected with the draft-stem and draft-rod, substantially as and for the purpose set forth.

8. In a car-coupler, the combination of a draft-stem, having a pocket adapted to actuate a draft-spring, a draft-rod extending through the pocket and secured in the rear thereof, and a coupling-head independently connected with the draft-stem and draft-rod, substantially as and for the purpose set forth.

9. In a car-coupler, the combination of a draft-stem, having a pocket adapted to actuate a draft-spring, a draft-rod extending through the pocket and secured in the rear thereof, and a coupling-head pivotally connected with the draft-stem and draft-rod, substantially as and for the purpose set forth.

10. The combination, with a coupling-head, of a draft-stem, having a pocket adapted to embrace the followers, and a draft-rod attached to the coupling-head extending through the pocket and adapted to engage with another set of followers, substantially as and for the purpose set forth.

11. The combination, with a coupling-head, of a hollow draft-stem, attached to a coupling-head and having a pocket embracing the followers and a draft-rod attached to the coupling-head, extending through the pocket and secured in the rear thereof, substantially as and for the purpose set forth.

12. The combination, with a coupling-head, of a hollow draft-stem, attached to the coupling-head and having a pocket embracing the followers, and a draft-rod, attached to the coupling-head, extending through the pocket and engaging with another set of followers independently connected with the car, substantially as and for the purpose set forth.

13. The combination, in a car-coupling, of a draft-stem, having a pocket adapted to embrace a set of followers, a draft-rod extending through the pocket and adapted to engage with the rear of the pocket, and with the front and rear of the second set of followers, substantially as and for the purpose set forth.

14. The combination, with the coupling-head, of a draft-stem, a draft-rod, and a swivel-pin connecting the draw-stem, draft-rod and coupling-head, substantially as and for the purpose set forth.

15. The combination, with a coupling-head, having a recess in its rear wall, of a coupling-hook adapted to swing at the side and rear of the coupling-head and having a boss upon its shank adapted to take into the recess, substantially as and for the purpose set forth.

16. The combination, with the coupling-head, having a recess in its side and rear wall, and a secondary recess in the rear wall; of a coupling-hook, adapted to swing in the side and rear recess, and provided with a boss upon its shank adapted to take into the secondary recess, substantially as and for the purpose set forth.

17. The combination of a draft-stem; a coupling-head pivoted thereto; and a coupling-hook pivoted to the stem, and having a shank adapted to swing at the side and rear of the coupling-head and formed to partially embrace it, substantially as and for the purpose set forth.

18. The combination of a draft-stem; a coupling-head pivoted thereto, and having a recess in its rear wall; and a coupling-hook adapted to swing at the side and rear of the buffer-head and having a boss adapted to take into the recess, substantially as and for the purpose set forth.

19. The combination of a draft-stem; a coupling-head pivoted thereto, and having a recess in its side and rear wall, and a secondary recess in the rear wall; and a coupling-hook adapted to swing in the side and rear recess, and provided with a boss adapted to take into the secondary recess, substantially as and for the purpose set forth.

20. The combination, with a coupling-head, of a draft-stem; and a swivel-pin connecting the coupling-head, and draft-stem, and having its lower end smaller than its upper portion, substantially as and for the purpose set forth.

21. The combination, with a coupling-head, of a draft-stem, a draft-rod, and a swivel-pin connecting the coupling-head, draft-stem, and draft-rod, and having its lower end smaller than its upper portion, substantially as and for the purpose set forth.

22. The combination of a draft-stem; a draft-rod; a coupling-head; a coupling-hook; and a swivel-pin connecting the draft-stem, draft-rod, coupling-head and coupling-hook, and having its lower end smaller than its upper portion, substantially as and for the purpose set forth.

23. The combination of a draft-stem; a coupling-head; a coupling-hook, having a shank to swing at the side and rear of the head and formed to partially embrace it, and a swivel-pin connecting the stem, the head and the hook, and having its lower end smaller than its upper portion, substantially as and for the purpose set forth.

24. The combination of a draft-stem; a coupling-head having a recess in its rear wall; a coupling-hook adapted to swing at the side and rear of the head and having a boss on its shank adapted to take into the recess; and a swivel-pin connecting the stem, the head and the hook, and having its lower end smaller

than its upper portion, substantially as and for the purpose set forth.

25. In a car-coupler, a swinging hook adapted to engage with the hook of an opposing coupler, and a supplemental hook adapted to engage with a catch or jaw upon the guide-arm of an opposing coupler, substantially as and for the purpose set forth.

26. In a car-coupler, a swinging hook adapted to engage with the hook of an opposing coupler, and a supplemental hook swinging therewith adapted to engage with a catch or jaw upon the guide-arm of an opposing coupler, substantially as and for the purpose set forth.

27. The combination in a car-coupler, of a draft-stem; a coupling-head, and projections from the head adapted to take over and under the guide-arm of an opposing coupler, substantially as and for the purpose set forth.

28. The combination, in a car-coupler, of a draft-stem; a coupling-head; a coupling-hook; one or more projections from the hook adapted to take over or under the hook of an opposing coupler; and a shoulder or stop on the head adapted to engage the projections or projection from the hook, substantially as and for the purpose set forth.

29. The combination, in a car-coupler, of a draft-stem; a coupling-head; a coupling-hook; one or more projections from the hook adapted to take over or under the hook of an opposing coupler; and projections from the head adapted to take over or under the head of an opposing coupler, substantially as and for the purpose set forth.

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