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## CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 312,110, dated February 10, 1885.

Application filed July 16, 1884. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN WRIGHT FERGUSON, of Sardis, in the county of Panola and State of Mississippi, have invented a new and Improved Car-Coupling, of which the following is a full, clear, and exact description.

The object of my invention is to provide a car-coupling which may be operated to couple and uncouple the cars without going between the cars, and thus avoid injury to the trainmen.

The invention consists in particular constructions of the draw-head with a coupling-stud fixed to the floor of its link-socket, and an opposing stud pendent from a hinged cap-plate, together with an uncoupling device or frame located behind the studs, and adapted to lift the upper stud away from the lower one, and to raise the end of the link to allow the cars to be separated.

The invention includes, also, a contrivance of a link-carrier adapted to guide the free end of the coupling-link into the opposing draw-head and behind the draw-head studs for coupling automatically, and in various details of construction and combinations of parts of the coupling, all as hereinafter fully described and claimed.

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

Figure 1 is a sectional and a side elevation of opposite car-couplings constructed according to my invention. Fig. 2 is a sectional plan and a plan view of the opposite couplings, and Fig. 3 is a front elevation of one of the couplings with the link-carrier partly broken away.

The letter A indicates the draw-head of my improved coupling; B, the coupling-link; C, the link carrier, and D the uncoupling frame or device.

The draw-head A is made with the interior chamber or link-socket, *a*, to the floor of which is fixed rigidly the heavy stud or horn E, which is inclined upward and backward at the front, as at *e*, and has a back end or face, *e'*, which is vertical, or nearly so, and against which the link B draws. The stud E extends upward for about half the height of the socket *a*, and so as to meet or nearly meet the pend-

ent stud or horn F, which is fixed to the lower side of a plate, G, which is pivoted at *g*, near the front end of the draw-head, and so as to close down into a suitable recess, *g'*, at the back end of the link-socket. This plate G, when closed, forms a cap or cover to the link-socket *a*, and when it is opened it lifts the stud F away from the stud E, to permit the end cross-bar, *b*, of the link B to drop behind the stud E for coupling the cars, as hereinafter more fully explained. The front face, *f*, of the stud F is beveled downward and backward, or reversely to the stud E, and the end of the bottom of the draw-head is flared in continuation of the bevel of the stud E, so that the link will be guided to place; and, further, to facilitate the proper engagement of the link with the stud E, I make the link B flaring or increasing in width from the ends *b* toward its center, where it has a cross-bar or stiffener, *b'*. This sidewise flare of the link is such that when the end *b* of the link is in position to drop behind the stud E of the draw-head the opposite side bars, *b''*, of the link will have been guided by the side walls of the draw-head, so as to center the end of the link over the stud and insure its dropping behind the stud, as will be understood from Fig. 2.

The link-carrier C consists of a cross-head, C', having an upwardly and backwardly beveled upper face, *c*, and a front face, *c'*. I prefer to make this head C' of thin metal, having a box-like form without back or bottom, with ends *c'' c''*, to which latter the forwardly-projecting bars or arms H H are rigidly fixed by the pins or screws *h*. The bars H pass through guide eyes or loops I, fixed at the opposite sides of the draw-head, and connect behind the eyes by pivots *i* with the bars J, which are pivoted at *j* to the draw-head A. Springs K, fixed to the projecting ends of a cross bar, L, held to the draw-head, act by their lower ends against the back edges of the bars J, to swing them outward and carry the bars H and heads C' forward, which is their normal position when the cars are uncoupled, the ends *c'* of the heads C' then ranging about vertically, as in Fig. 1, which shows one draw-head somewhat higher than the other, to better illustrate the action of the link-carrier. The springs K may be held in any suitable manner to the draw-head, so as to act on the



bars J, and blocks or pins *l* are provided on the draw-head to limit the forward throw of the bars J and the link-carrier heads by the springs.

5 The uncoupling device D consists of a rectangular frame having a lower end cross-bar, *d*, on which the end *b* of the coupled link rests at the inner end of the link-socket *a*, and two side arms, *d'* *d'*, which rise at either side of the socket *a*, and through side notches, *g*<sup>2</sup>, in the cap-plate G, and the arms *d'* *d'* are connected by a cross-bar, *d*<sup>2</sup>, which rests on the plate G to hold it down, and to which bar is fixed an eye, *m*, from which a pull cord or chain, M, extends to the top of the car or to the car-platform.

The side arms, *d'* *d'*, of the uncoupling-frame D have studs or pins N, which, when the cord M is pulled to raise the frame D, come against the under side of the cap-plate G, to raise it on its pivot *g* and lift the stud F away from the stud E, and at the same time the lower bar, *d*, of the frame D lifts the inner end, *b*, of the link above the top of the stud E, when the link may be withdrawn. The lower cross-bar, *d*, of the frame D strikes stop studs or pins O, fixed in the draw-head, to limit the rise of the frame when the link has been lifted above the top of the stud E.

30 The operation is as follows: As shown, the left-hand car and coupling, with the link B held at one end behind the stud E, has advanced sufficiently to cause the free end of the link to ride up the inclined face *c* of the link-carrier of the right-hand car and raise the link, so that it will be guided over the carrier into the draw-head, and on entering the draw-head the end of the link will ride up the inclined face *e* of the stud E and push up the stud F and drop behind the stud E to couple on the right-hand car automatically. As the cars come together the ends *c'* *c'* of the opposite link-carriers will strike each other and swing the carriers backward against the tension of the springs K until the draw-heads strike each other and the coupling is effected, in which positions (represented by the dotted lines at the right hand in Fig. 1) the carriers will remain until the cars are uncoupled by lifting one of the frames D, as before described, and when the cars are drawn apart the springs K will act instantly to thrust the link-carriers of both draw-heads out again to the positions shown

in full lines in Figs. 1 and 2, ready for coupling with the next car, as required. Should the coupling-link be held in the high or right-hand draw-head when the coupling is to be made, the link will of course be held up entirely by the higher or right-hand link-carrier until it strikes the inclined face of the stud E of the lower draw-head, as will readily be understood.

It is obvious that the cars may be coupled or uncoupled without requiring the train-men to go between them, thereby avoiding the dangers to life and limb incident to the usual methods of coupling; and when the coupling is effected the link cannot jar out of either draw-head, and the link-carriers adjust themselves automatically to guide the entering link properly without attention of the train-men.

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

1. In a car-coupling, the combination, with the draw-head A, provided with the stud E on the floor of its link-socket, of the cap plate G, for closing the upper part of the socket, hinged to the forward end of the draw-head, and provided with the stud F on its under face, and the sliding frame D, adapted to engage with the hinged cap, substantially as herein shown and described.

2. The combination, with the draw-head A, provided with a stud, E, the hinged plate G, provided with the stud F, and the uncoupling-frame D, of the stops N O, substantially as shown and described.

3. The uncoupling-frame D, made with a lower cross-bar, *d*, to lift the link, side bars, *d'* *d'*, having stops N to lift the plate G, and an upper cross-head resting on said plate, substantially as shown and described.

4. The link-carrier C, made with a cross-head, C', and arms H H, guided to move along the draw-head and pivoted to bars J J, which are pivoted to the draw head, substantially as shown and described.

5. The combination, with the link-carrier consisting of head C', arms H H, and bars J J, pivoted to each other, and the draw-head, as specified, of the springs K K, substantially as shown and described.

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Witnesses:

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