

(No Model.)

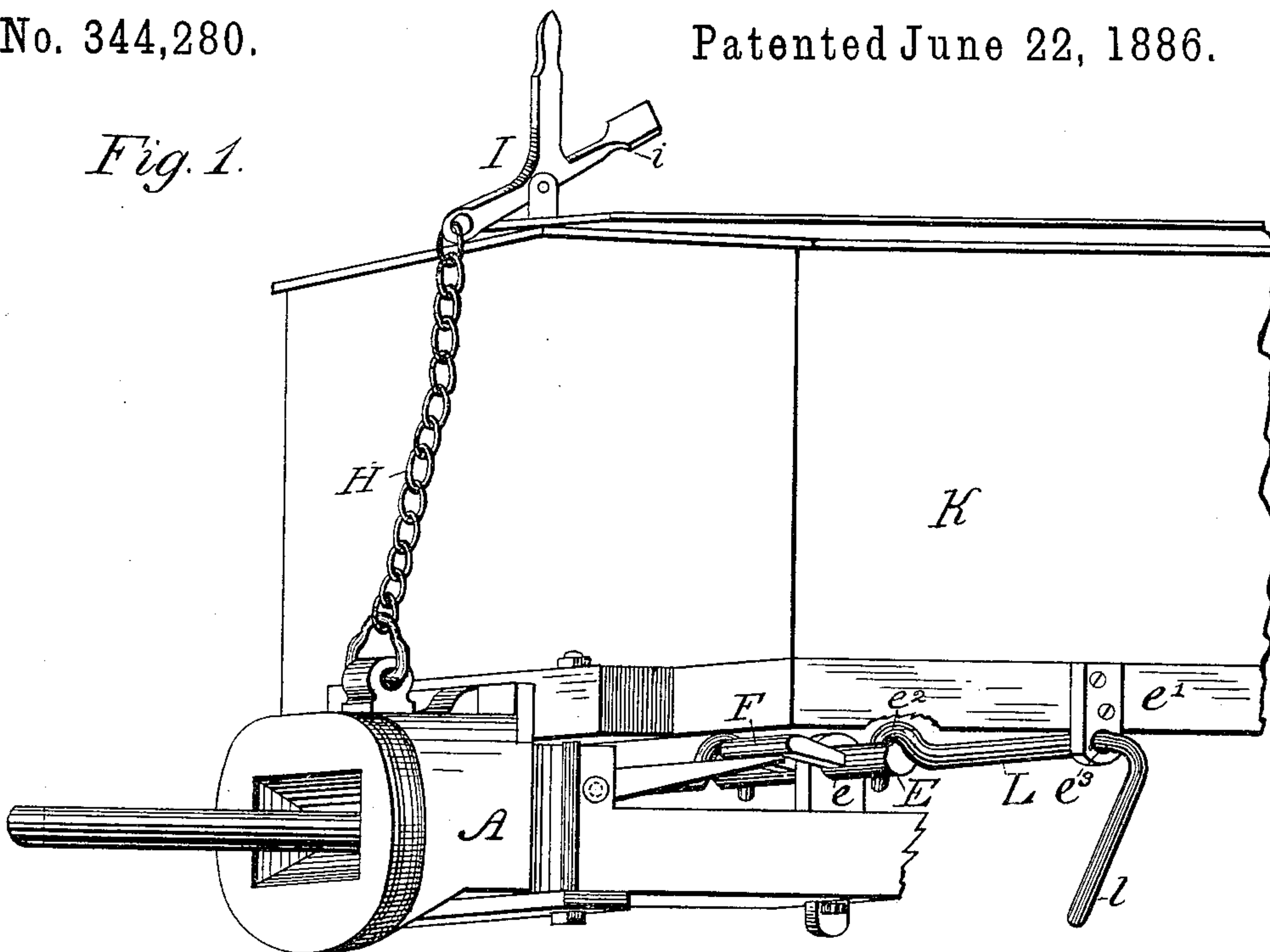
2 Sheets—Sheet 1.

M. KAY.  
CAR COUPLING.

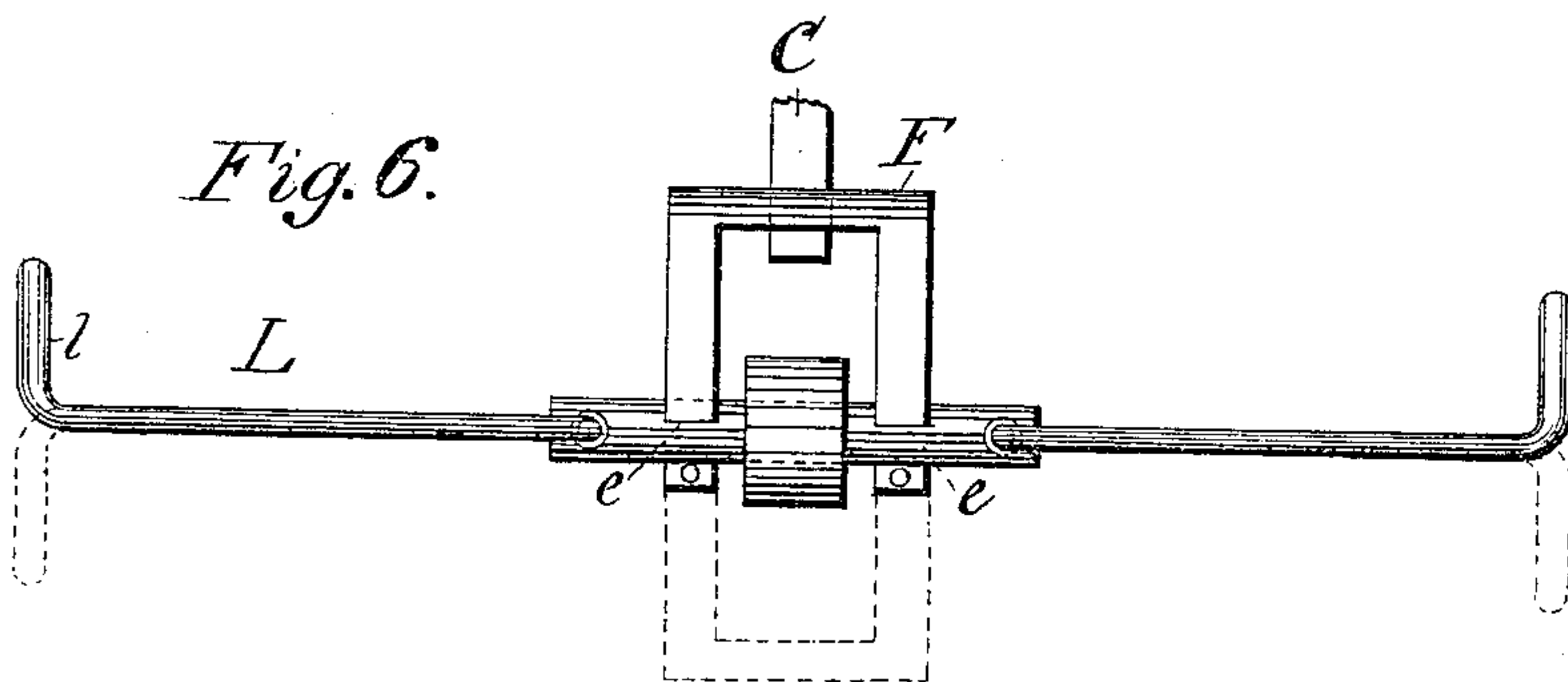
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*Fig. 1.*



*Fig. 6.*



WITNESSES:

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## CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 344,280, dated June 22, 1886.

Application filed February 15, 1886. Serial No. 191,941. (No model.)

*To all whom it may concern:*

Be it known that I, MOSES KAY, a citizen of the United States, residing at Rosedale, in the county of Wyandotte and State of Kansas, have invented certain new and useful Improvements in Car-Couplings; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming a part of this specification.

My invention has for its object a car-coupling which will automatically self-couple and eject the shackle, and wherein the said shackle may be retained in the draw-bar in a horizontal position, and in readiness to couple with an opposite draw-bar without unnecessary weight applied thereto to effect a leverage, and also to accomplish the successful elevation of the coupling-pin when the cars to which the draw-bar is attached are in motion and the greatest strain is brought to bear upon said coupling-pin; and it consists in the novel construction and arrangement of parts hereinafter fully described, and specifically pointed out in the claims.

In the drawings, Figure 1 is a view in perspective, showing the improved draw-bar attached to the body of a car, and showing the means for operating the coupling devices from the side of the car. Fig. 2 is a longitudinal sectional view of the draw-bar detached from the car, and showing the shackle in a coupled position in the draw-bar. Fig. 3 is a similar view of the draw-bar as seen in Fig. 2, and showing the position of the coupling-pin and the automatic devices after the said shackle has been ejected from said draw-bar. Fig. 4 is a front view of the coupling-pin, showing the transverse perforation therein for the reception of the elevating-lever. Fig. 5 is a side view of the coupling-pin, as seen in Fig. 4. Fig. 6 is a plan view of the independent lever for operating the elevating-lever, and showing the hand-lever on either side of the car.

In the construction of my invention I make the draw-bar A of the usual length, and with the inclined opening  $a$  and longitudinal opening  $a'$ , which extends through the draw-bar, and to a certain distance admits the shackle. Near the outer end, and vertically through the draw-bar, I make a rectangular opening,  $a^2$ ,

which receives the coupling-pin B and intersects with the longitudinal opening  $a'$ , near the inclined opening  $a$ . In a vertical relation the head of the draw-bar is made of increased thickness a portion of its length, inclining from the buffer to the draw-bar, as  $A'$ , and above the longitudinal opening  $a'$  in the draw-bar A is made a longitudinal slot,  $a^3$ , extending into the upper part,  $A'$ , of the draw-bar, and separated from the longitudinal opening  $A'$  below by horizontal division seat or portion  $a^4$  of the draw-bar. The said slot  $a^3$  extends from the vertical opening  $a^2$  in rearward direction and opens toward and beneath the car, and under the portion  $A'$  said draw-bar is made of a suitable length and width to permit the operation of a lever therein, and the upper portion inclines in a downward relation or toward the draw-bar, the opening near the said draw-bar being considerably smaller in a vertical direction.

In the construction of my improved coupling-pin B, I make said pin flattened its entire length, and the upper portion,  $b$ , of said shackle of an increased width to its lower portion,  $b'$ , so as to extend with the rectangular vertical opening  $a^2$  in the draw-bar, in which construction are formed the shoulders  $b^2$   $b^2$  on opposite sides of the said bar, which shoulders rest upon the divisional portion or seat  $a^4$  within the draw-bar. The lower or narrow portion,  $b'$ , of the said pin extends through the said divisional portion or seat  $a^4$  in a transverse relation to the longitudinal opening  $a'$  in the draw-bar and couples the shackle, the vertical opening  $a^2$  at the point  $a^x$ , as it passes through said divisional portion  $a^4$ , being made similar in dimensions to receive the lower end,  $b'$ , of the coupling-pin B, which is of corresponding size and made to fit therein without binding.

A slight distance above the shoulders  $b^2$   $b^2$  in the coupling-pin B, and in a transverse relation to and through said pin, I make the perforation  $b^3$ , the outer side of which perforation is curved, as at  $b^4$   $b^4$ , and on opposite sides of the said pin B. The upper end of the coupling-pin B, which projects above the draw-bar A, I provide with a perforation,  $b^5$ , through which is passed one link of a chain, H, and the coupling-pin is drawn upward and out of the draw-bar from the top of the car by means of the hand and foot lever I. I then



make an elevating lever of a sufficient length to enter the perforations  $b^3$  in the coupling-pin B and extend in a longitudinal direction of the draw-bar through slot  $a^3$  and in rear beyond the portion A' of the draw-bar to give the requisite leverage, the end opposite to that engaging with the coupling-pin B being exposed and extending along the upper portion of said draw-bar which is beneath the body of the car, and between which a sufficient height is afforded to operate said lever. The elevating-lever C is bent upwardly at its center or midway its length, and the opposite ends,  $c^1 c^2$ , inclined at an obtuse angle therefrom in opposite directions. The said elevating-lever C is inserted in the slot  $a^3$  in such a manner that when the shoulders  $b^2 b^2$  of said pin B are resting upon the divisional portion or seat  $a^4$ , and one end of the lever C inserted in the perforation  $b^3$  in coupling-pin B, the opposite end of said lever C is elevated. The said lever C is secured in the slot  $a^3$  by means of a bolt,  $c$ , which passes transversely through the draw-bar, and through the central point of said lever midway its length, the end of the lever engaging with the coupling-pin and the point of fulcrum of said lever being slightly above the divisional portion  $a^4$  of the draw-bar. Toward the end of the draw-bar A, which extends beneath the car and is in a suitable distance in rear of the end of lever C, extending in the same direction, is arranged a perforated bolt, D. A perforation,  $a^5$ , is made vertically through the draw-bar to receive the lower end,  $d^2$ , of bolt D, the upper portion,  $d$ , of which bolt is made of increased thicknesses, and provided with shoulders  $b' b'$ , which limit its extension through said perforation. The said lower end,  $d^2$ , of bolt D, extends a slight distance within a transverse slot,  $d^3$ , and a pin,  $d^4$ , prevents the accidental removal of said bolt. The portion  $d$  of bolt D extends upwardly from the draw-bar a sufficient distance, and is perforated at  $d^5$  transversely and near the top of said bolt. I then make a rod, E, to extend a slight distance beyond the opposite sides of the draw-bar, as seen in Fig. 1, and through the perforation  $d^5$  in the bolt D, and rotates freely therein. On either side of the bolt D, and in the rod E, I make the transverse perforations  $e e$ . The independent lever F is a rod or bar bent at right angles, or U-shaped, the opposite ends of which are inserted in the perforations  $e e$  in the rod E, and on opposite sides of the bolt D, the said independent lever projecting toward the front of the draw-bar so far as to rest upon the end  $c^2$  of the lever C, so that as the said independent lever F is actuated by the rod E the end  $c^2$  of said lever C is thrown in a downward direction toward the draw-bar and the opposite end elevated, and with it the coupling-pin B.

In the longitudinal opening  $a'$  of the draw-bar A, I place the self-acting ejecting-plunger G, which is made in length to extend from the covering-point of the opening  $a$  with the lon-

gitudinal opening  $a'$  in the draw-bar a distance slightly exceeding that described between the front part of the draw-bar and its portion A'. The plunger G is made with a head,  $g$ , which exactly fits the opening  $a'$  in the draw-bar, and a stem,  $g'$ , of reduced size from the said head. I then make a longitudinal transverse slot,  $g^2$ , through the plunger G, at the end opposite to that having the head  $g$ , and through the end of stem  $g'$ , which limits the lateral play of said plunger. In the slot  $a'$  is cast a transverse partition,  $a^7$ , which is perforated in the longitudinal direction of the slot  $a'$ , as at  $a^8$ , and of the proper size to receive the stem  $g'$  of the plunger G. I then make a vertical perforation,  $a^9$ , which passes through the draw-bar A, and through the transverse partition  $a^7$ , and of the proper size to receive the bolt  $g^3$ . Around the stem  $g'$ , I fit a spiral spring,  $g^5$ , one end of which comes in contact with the head  $g$  of plunger G. The plunger G is then inserted in the slot  $a'$  of the draw-bar with the head  $g$  toward the opening  $a$  in said draw-bar, and pushed so far rearwardly that the slot  $g^2$  in the stem  $g'$  is directly opposite the vertical perforation  $a^9$ . In the draw-bar and the end of the spring  $g^5$ , which is opposite to that bearing against the head  $g$ , bearing against the partition through which the stem  $g'$  passes, the bolt  $g^3$ , having a head,  $g^4$ , is then inserted through the perforation  $a^9$  in the draw-bar, and through the slot  $g^2$  in the plunger G, the portion of the perforation  $a^9$  in the top of the draw-bar being reamed out to permit the head  $g^4$  of the slot  $g^3$  to remain flush with the said top of the draw-bar. The stem  $g'$  of the plunger G is made of a sufficient length to permit the extension of the head  $g$  of the plunger beneath the bolt B, and the bolt  $g^3$  in the slot  $g^2$  prevents the play to this extent.

To limit the backward movement of the head  $g$  of the plunger G in the slot  $a'$  of the draw-bar A so far as to produce the desired result, I cast a shoulder,  $a^{13}$ , in the draw-bar A, which extends from the opposite sides of the longitudinal opening  $a'$  a slight distance in rear of the said head  $g$  of the plunger G, so that the shackle M, the opposite ends of which are provided with interior vertical flat surfaces,  $m$ , may be inserted and force the head  $g$  of the said plunger against said shoulder  $a^{13}$ , thus permitting the pin B to drop in place and couple the shackle, and also enabling the tension of the spring to be exerted against the head  $g$  of the plunger, to keep the shackle from to-and-fro movement and the shackle in a horizontal position.

To operate the lever E from the side of the car K, I employ a lever, L, with a hook,  $e^2$ , upon one end, which hook is passed through a perforation,  $e$ , in one end of the rod E, by which arrangement I make a free joint, so as the draw-bar A is moved to and fro under the car the lever L accommodates this action. Upon the side of the car K is secured, in any suitable manner, a lug,  $l'$ , perforated at  $l^3$ , the perforated end of which depends below the



lower sill of the car, through which is passed the opposite end of the lever L, and the said end bent downwardly at right angles, forming the handle *h*. Upon the top of the car I provide  
 5 a combined hand and foot lever, I *i'*, made in one piece, the said foot-lever *i'* extending horizontally over the end of the car and connected at one end to the chain attached to the coupling-pin, and the hand-lever I extending in a  
 10 vertical relation therefrom.

In the operation of my improved coupling devices the shackle is inserted in the draw-head against the head of the plunger, thereby forcing said plunger rearwardly, and, when  
 15 nearly to the shoulder formed in the longitudinal opening *a'* in the draw-bar the coupling-pin falls into the vertical opening in the draw-head made therefor, and secures the shackle. When it is desired to eject the  
 20 shackle, the hand-lever at side of the car is thrown in a rearward direction, which brings the independent lever down upon the end of the elevating-lever in contact with the coupling-pin, which elevates said pin and releases  
 25 the shackle. The plunger then acts to throw the shackle out of the draw-bar, and as soon as the said shackle is ejected from the draw-bar the head of the plunger is carried by the spring upon its stem across the vertical opening  
 30 made to secure the coupling-pin, and thus intercepting the fall of the said pin until the shackle has been replaced in the draw-bar or the car is coupled with an opposite car having a shackle in its draw-head. By means of the  
 35 combined foot and hand lever on the top of the car, the hand-lever being attached to the foot-lever near the fulcrum of said foot-lever, the chain attached to said foot-lever lifts the coupling-pin from its vertical opening in the draw-bar, and thus releases the shackle, so that the  
 40 levers on the top or side of the car have only to be given one relative downward or side movement, and the coupling devices are in readiness to couple with an opposite draw-bar provided with its shackle, and without the  
 45 necessity of fastening the levers at any point the hand-lever combined with the foot-lever affords the operator a support, and much greater leverage can be applied to lift the  
 50 coupling-pin. By means of the elevating-lever on the draw-bar I am enabled at all times to lift the coupling-pin, especially when the strain is greatest upon the said pin, and with more satisfactory results.

55 For the purpose of making the draw-head equally strong on the sides, where the metal is of the least thickness, I cast either a ring or flanges around the outside draw-head, as found convenient.

60 In Fig. 1 I have shown the independent lever for operating the elevating-lever in one position, and with the handle attached to rod E depending therefrom and at the side of the car, whereby the instant disengagement of the  
 65 coupling-pin is effected.

In Fig. 6 the handle is shown in a correspondingly horizontal plane with the inde-

pendent lever F, so that the said lever may be thrown entirely over the bolt D, and rest upon the draw-bar in rear. In this manner  
 70 the instant reversal of the independent lever acts to throw down the end of the elevating-lever from the combined weight of said lever. When the independent lever F is thrown over the bolt D, away from lever C, the weight of  
 75 the said lever F and the handle *h* prevents in the movement of the car the accidental reversal of said lever in either direction.

Having fully described my invention, what I now claim as new, and desire to secure by  
 80 Letters Patent, is—

1. The combination, with the draw-bar provided with a longitudinal opening therein and a vertical perforation, of a coupling-pin provided with a flat side toward said longitudinal  
 85 opening, a shackle provided with interior flattened ends, and a yielding ejecting device within said longitudinal opening in the draw-bar, contacting with said shackle, whereby the shackle is kept in a horizontal position in the  
 90 draw-head, as described.

2. The combination, with the draw-bar provided with a longitudinal opening therein and a vertical perforation to receive the coupling-pin, and a vertically-extended portion of said  
 95 draw-bar provided with a longitudinal opening therein intersecting with said vertical perforation, of a coupling-pin perforated midway its length, and with the sides of said perforation inclined, and a bent lever fulcrumed  
 100 midway its length in said longitudinal opening, and having one end extended into said perforation in said coupling-pin, and an opposite free end of said lever extending along the draw-bar, whereby an increased leverage  
 105 is obtained, as described.

3. The combination, with the draw-bar provided with a longitudinal opening and a spring-actuated plunger therein, adapted to eject the shackle, and a vertical perforation  
 110 to receive the coupling pin, of a vertically-extended portion of said draw-bar, provided with a longitudinal slot, a coupling pin having a central perforation arranged in said vertical perforation, and having the sides of  
 115 said perforation inclined, and a bent lever fulcrumed in said slot in said vertically-extended portion, one end of which extends into the perforation in said pin, and the free end of said lever extending along the draw-bar, and a  
 120 transverse lever arranged beneath the car and provided with a bent lever at right angles thereto, and adapted to contact with the free end of said lever, as described.

4. The combination, with the coupling-pin, 125 of a chain or its equivalent attached at one end to said coupling-pin, and a combined foot and hand lever pivotally attached to the top of the car and connected with the opposite end of said chain, as described.

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Witnesses:

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 FRED. W. PERKINS.