

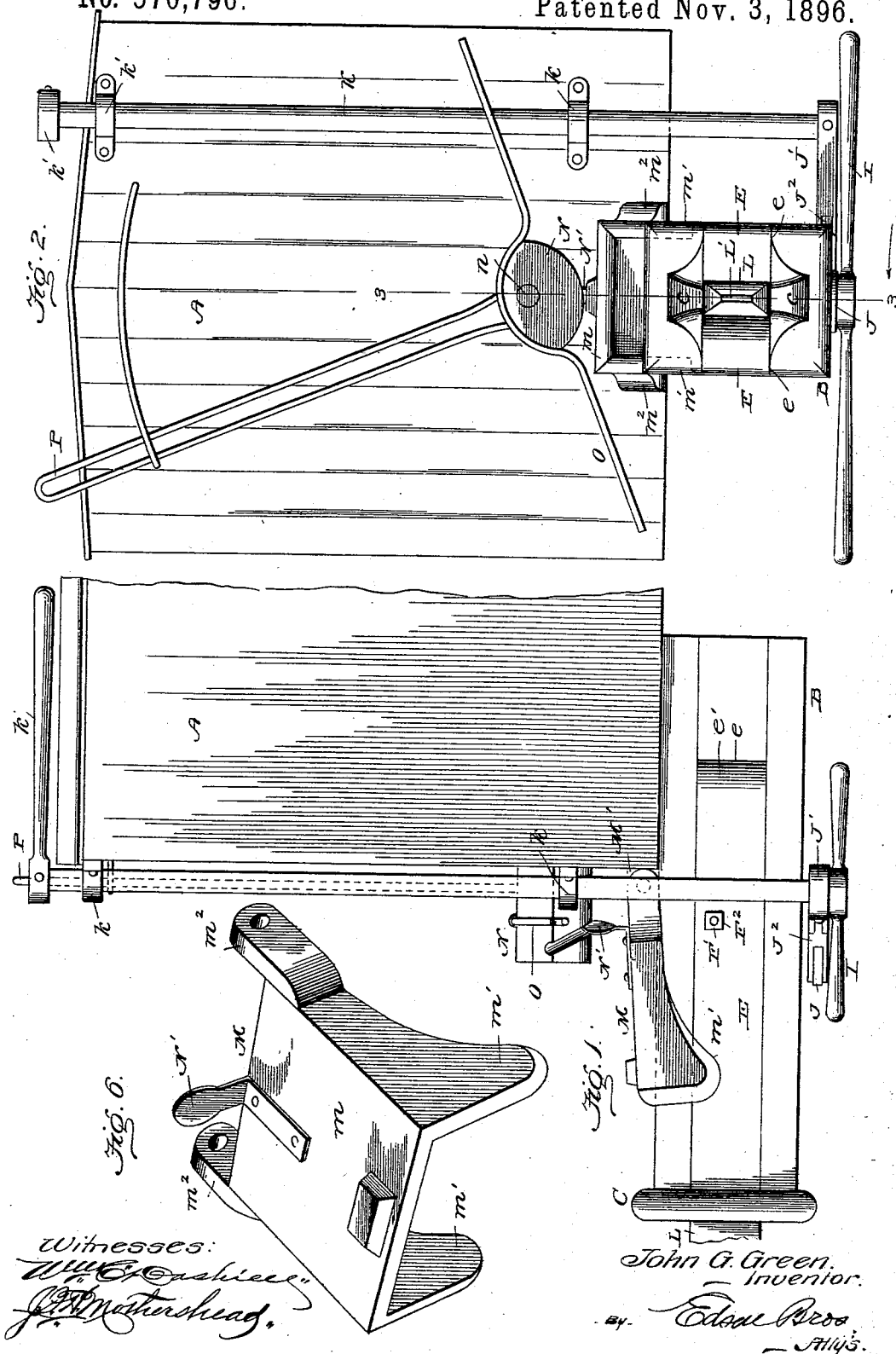
(No Model.)

3 Sheets—Sheet 1.

J. G. GREEN.
CAR COUPLING.

No. 570,796.

Patented Nov. 3, 1896.



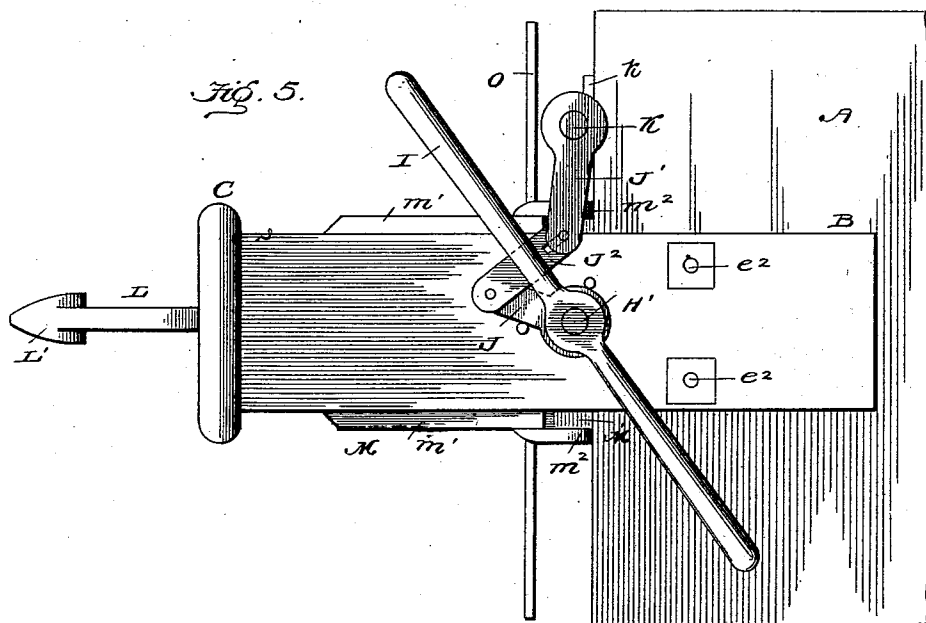
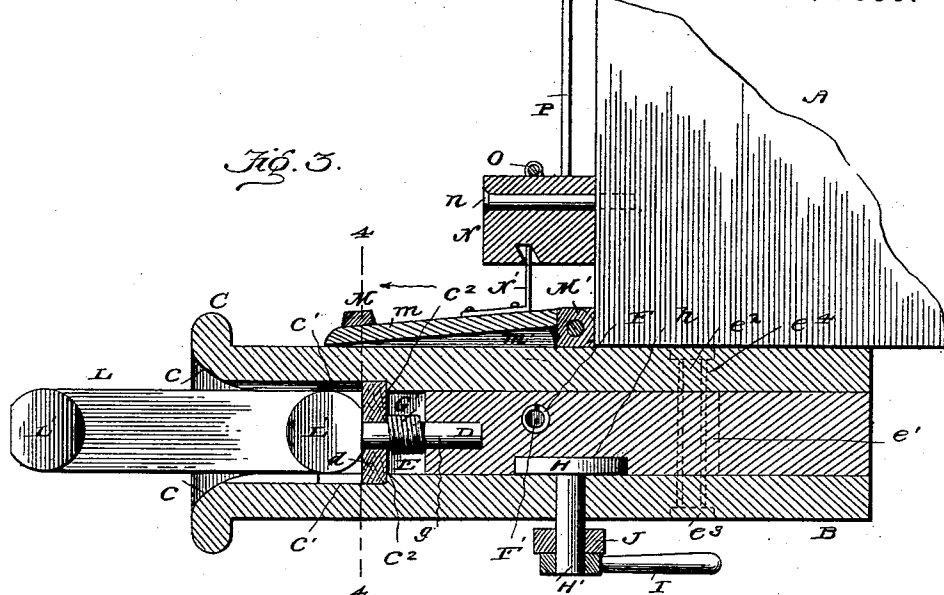
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3 Sheets—Sheet 2.

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Witnesses:

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J. H. Mothershead

John G. Green.
— Inventor

By *Edson Bros.*

— Attys.

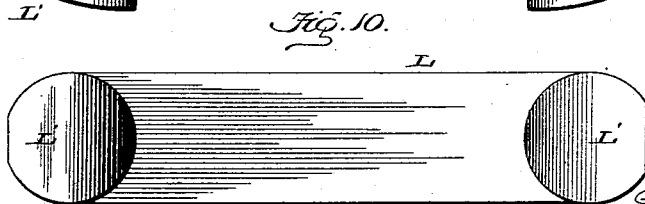
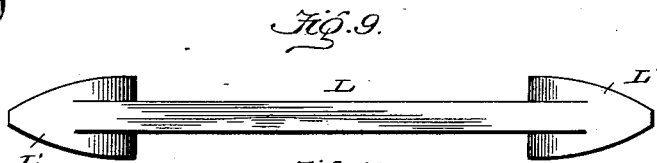
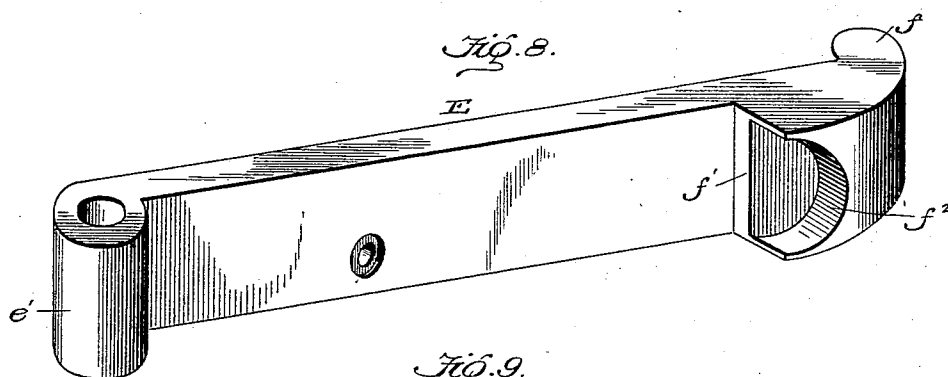
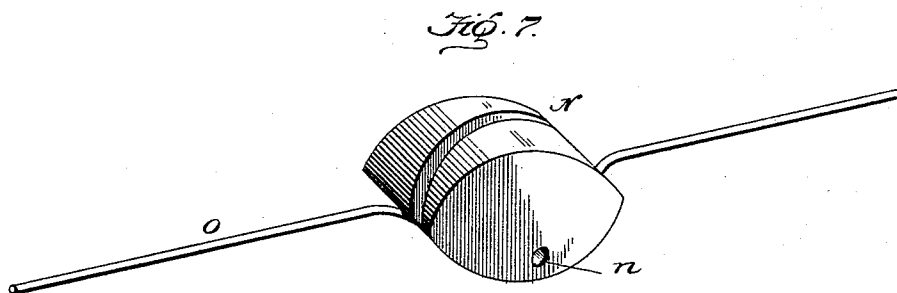
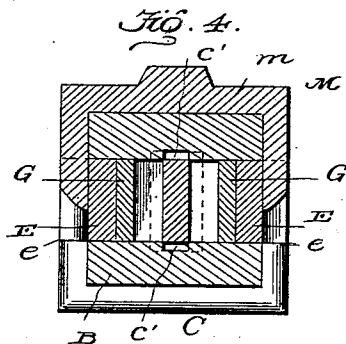
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3 Sheets—Sheet 3.

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Witnesses:

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UNITED STATES PATENT OFFICE.

JOHN G. GREEN, OF UNION CITY, TENNESSEE, ASSIGNOR OF ONE-HALF TO
ANDREW J. HARPOLE, OF SAME PLACE.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 570,796, dated November 3, 1896.

Application filed July 23, 1896. Serial No. 600,263. (No model.)

To all whom it may concern:

Be it known that I, JOHN G. GREEN, a citizen of the United States, residing at Union City, in the county of Obion and State of Tennessee, have invented certain new and useful Improvements in Car-Couplings; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in couplers for railway-cars, street-railway cars, &c., of that class which employ a pair of oppositely-movable similarly-constructed jaws in connection with a headed coupling bar or link; and the objects of the invention may be briefly stated as follows, to wit: First, to provide a locking device for securing the coupler in such manner as will prevent the cars of a train from breaking apart while running, and thus prevent accidents; secondly, to provide means whereby the cars may be coupled or uncoupled without requiring the brakeman to pass between the cars or subjecting himself to danger of being injured while operating the levers or devices that control the position of the jaws; thirdly, to provide means whereby the jaws of the coupler and the locking device for said jaws may be operated or adjusted from either side of the car, from the roof of a freight-car, or from the platform of a passenger-car; fourthly, to so construct the jaws and headed coupling-bar that the latter may have a limited rising-and-falling motion in the draw-head and thereby accommodate itself to other draw-heads at different elevations, and, finally, to simplify the construction without sacrificing strength and durability of the parts.

I am aware that a great number of couplings have been devised, a few only of which have been of practical utility in the operation of trains. It is my aim to provide a coupler by which the coupling and uncoupling of cars may be effected with facility, safety, and simplicity and which operates automatically when the cars are brought together, and may have the jaws locked by a safety contrivance to prevent the cars from breaking apart when the train is in motion.

The jaws may be unlocked and the coupling-bar released when the train is in motion, either running slowly or fast, and while either on an up grade or a down grade, without requiring the operator to pass between the cars.

Some of the advantages of my improved coupler, in addition to those hereinbefore mentioned, are that much time and labor may be saved in making up trains, shifting cars, &c., and railway companies saved much expense by reducing to a minimum the number of accidents to their employees. Cars may be coupled or uncoupled on the highest bridges or in other dangerous or rough places in the track with as much ease and facility as on any portion of the road. It affords engineers and brakemen the best facilities for receiving and giving signals, because the men are always in sight of each other while operating the train, either in the switch-yards or on the main lines. The coupler may be operated without requiring the slackening up of the train, as is necessary in some other styles of couplings, and all, or nearly all, of the working parts of the coupler are housed under the car and inside of the draw-head in such a manner as will prevent ice from collecting on the coupler and interfering with its workings.

With these ends in view my invention consists in the novel combination of devices and in the construction and arrangement of parts, as will be hereinafter fully described and claimed.

To enable others to understand my invention, I have illustrated a preferred embodiment of the same in the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a side elevation of a car-coupler embodying my invention as applied to a freight-car. Fig. 2 is a front elevation of the same. Fig. 3 is a longitudinal vertical sectional view thereof on the plane indicated by the dotted line 3 3 of Fig. 2. Fig. 4 is a transverse sectional view with the safety-locking device embracing the jaws of the coupler, the plane of the section being indicated by the dotted line 4 4 of Fig. 3. Fig. 5 is a bottom or inverted plan view showing the connection

between the operating-shaft and the cam-shaft for the twin jaws. Fig. 6 is a detail perspective view of one form of the safety-lock for the coupler-jaws. Fig. 7 is an inverted perspective view of the pivoted operating-piece for the safety-lock. Fig. 8 is a detail detached view of one of the jaws of the coupler. Figs. 9 and 10 are views, in top plan and side elevation, respectively, of the coupling-bar.

Like letters of reference denote corresponding parts in all the figures of the drawings.

I have shown my coupler as applied to a freight-car, (indicated at A in the accompanying drawings;) but it is to be understood that the coupler may be readily applied to platform or passenger cars by simply changing the length of the operating-shaft and the position of the operating devices for the safety-lock.

B is the draw-bar, constructed at its front end to form a part of the draw-head C, and this draw-bar is mounted or fitted to the under side of the car-platform in any usual or preferred way to enable the draw-head and draw-bar to have a limited endwise movement when the cars abut together. The draw-bar should be provided with the usual buffer-springs to take up the shock due to the coupling of the cars and to hold the draw-head and draw-bar in their normally-advanced positions, as will be readily understood by those skilled in the art to which my invention relates.

The draw-bar and draw-head are cut out or away at the sides thereof to provide the recesses or slots $e e$, which extend through the front of the draw-head, whereby the draw-head is divided horizontally, leaving the top and bottom of the draw-head solid and integral with the draw-bar. These solid integral parts of the draw-head are at their front ends grooved and beveled on their opposing faces, as at $c c$, and the opposite longitudinal sides of the draw-head chamber are provided with straight longitudinal grooves or recesses $c' c'$, which terminate in abrupt shoulders $c^2 c^2$, that serve as stops to the sliding movement of a spring-pressed ejector D, to be hereinafter described.

E E are the twin jaws of the coupler. These jaws are similarly constructed or fashioned, and they are adjusted in the recesses $e e$ in the sides of the draw-bar and draw-head so as to fill the same, and when closed to lie flush with the outside of the draw-head and draw-bar. The rear end or heel of each jaw is enlarged and rounded, as at e' , and said end is fitted in a cavity in the draw-bar so that the jaw may turn therein and move or play in a horizontal direction. The heel of each jaw is pivoted in and to the draw-bar by a vertical bolt e^2 , that passes through a vertical aperture provided in the enlarged and rounded end of the jaw E. I prefer to countersink the nut e^3 for this pivotal bolt in the under side of the draw-bar, and to provide a

sleeve or bushing e^4 in the upper side of the draw-bar. The pivotal bolt is passed from above the draw-bar through the sleeve e^4 and the apertured heel of the jaw and then screwed in the countersunk nut, whereby the bolt is readily accessible at all times for the purpose of easily removing the bolt, so that the jaw E can be taken out of the draw-bar should it or any other interior part of the coupler be broken or injured to such an extent as to render the renewal or repair of the injured part desirable or necessary. The front end of each jaw is enlarged or thickened, as at f , to provide the abrupt shoulder f' , and on the inner face or side of the thickened shouldered end of the jaw is provided a rounded recess or groove f^2 , which opens rearwardly through the abrupt shoulder of the jaw for a purpose to be explained.

The opposing faces of the front ends of the two jaws are rounded or beveled, as at f^3 , in advance of the recessed parts of said jaws, said beveled or rounded parts of the jaws and the beveled front parts of the solid upper and lower parts of the draw-head converging inwardly toward a central line of the draw-head, so that the coupling-bar will be properly directed into the draw-head when the cars are coupled. It will be seen that the jaws E E form a part of the draw-head, and these jaws are thickened and shouldered to adapt the headed coupling bar or link to engage therewith when it is introduced into the draw-head.

The jaws are adapted to move or turn on their pivotal bolts in horizontal planes, and said jaws are normally contracted or drawn inwardly toward each other and to their closed positions flush with the outside of the draw-bar and draw-head by the coiled spring F. This spring is arranged within and transversely between the two jaws, and to the ends of the spring are fastened the threaded bolts $F' F'$, which are passed through apertures in the jaws, and which receive the nuts $F^2 F^2$ that attach the ends of the spring to the jaws.

Inside of the draw-head chamber is provided the vertical guide-plates G G, which are arranged longitudinally of the draw-bar and between the jaws E E, said guide-plates lying parallel to each other and on opposite sides of the guide-grooves $c' c'$, so as to provide a space for the ejector D. The head d of said ejector is fitted in the guide-grooves $c' c'$ and between the guide-plates G, and said ejector is slidably fitted in the draw-head chamber so that it will be guided by the grooves and plates.

To the head of the ejector is attached a horizontal stem or shank g , which is fitted in a guide or socket in the draw-bar so as to play or move therein, and around this stem g is fitted a coiled spring G' , which tends to normally force the ejector-head against the front stop-shoulders c^3 and to lie flush with the front ends of the guide-plates G. This ejector

lies centrally in the drawhead between the jaws E and directly in the path of the headed coupling-bar, so that the latter will strike the ejector-head and force it backwardly when the coupler-bar is introduced into the draw-head, and the sliding movement of this ejector-head is limited by the head coming in contact with the stop-shoulders c^2 , whereby the head is prevented from moving too far forward in its outward movement, and the inward movement of the ejector-head, under the impact of the ejector-bar, is arrested before the spring G' is compressed to such an extent as to threaten injury thereto.

The jaws E may be opened manually when it is desired to release the coupling-bar by devices which are operative from either side or from the platform or roof of a car. The jaw-operating cam H is fitted in a recess h in the lower edges of the guide-plates G or in the bottom side of the draw-head, and this cam is so shaped and arranged between the two jaws E that when the cam is turned to one position the jaws will be free from the influence of or contact with the cam, but when said cam is turned part way around, usually a quarter of a circle, it will ride against the jaws E and force them apart and outwardly a sufficient distance for the coupling-bar to be ejected or forced out of the draw-head by the action of the spring-pressed ejector D. This cam H is rigid with or carried by a short vertical shaft H' that is journaled in and passes downwardly through the draw-bar, and to this protruding end of the cam-shaft are attached a double-armed hand-lever I and a short lever J, forming a part of the knuckle-jointed connection with the vertical rock-shaft K that extends up to the platform or to the roof of a car.

The double-armed lever I is fastened centrally to the cam-shaft and its arms are of sufficient length to extend to the two sides of a car, so that the cam may be operated from either side of the car to open the jaws E E and release the coupling-bar.

The vertical shaft K may extend above the platform of a passenger-car, or said shaft may extend to the roof of a freight-car, as shown in Fig. 1, in which event the shaft may be journaled in brackets k attached to the front end of the car. The upper end of this rock-shaft is provided with a crank or wheel, as k' , for conveniently operating said shaft. To the lower end of the rock-shaft, below the car-platform, is fastened a short lever J', and the levers J J', between the cam-shaft and the rock-shaft, are coupled by the link J², pivotally attached to said lever, the whole connection constituting a knuckle-joint coupling between the two shafts. One of the members of this knuckle-joint connection has a slot, through which passes a pin or pivot that is free to play in the slot and thereby accommodate the connection to the endwise movement of the draw-bar, whereby the draw-bar may slide under the jar or impact of another draw-head when the cars come together without

breaking or wrenching the connection between the cam-shaft and the rock-shaft which operates the cam-shaft.

The coupling-bar L which I employ in my improved coupler consists of a straight rectangular bar, enlarged at its ends in a peculiar way to form the heads L' L'. Each head L' of the coupling-bar is made approximately spear-shaped, thickened at the heel and beveled toward the point. The thickened rear end of the head is rounded or convexed on both sides of the bar which joins the heads, and the head is beveled or rounded both horizontally and vertically toward a flat front edge. The peculiar shape of the head L' enables the coupling-bar to readily pass into the draw-head, the jaws of which yield to insure the passage of the head L', after which the jaws are drawn together by the spring F to confine the head within the draw-head and jaws. The rounded or convexed edges of the coupling-bar head L' fit in the rounded seats formed by the grooves or recesses $f^2 f^2$ of the jaws, and the head L' is thus given a limited rocking or oscillating movement in a vertical plane between the jaws and in the draw-head, whereby the coupling-bar may be easily connected to draw-heads lying at different heights on other cars.

In connection with my improved coupler I provide a safety-lock to prevent the jaws from spreading, when the train is in motion, under the pull or strain of the coupling-bar or from other causes, whereby the cars remain coupled together under all conditions of service and the train is prevented from breaking apart.

The preferred embodiment of my safety-lock, as shown in the accompanying drawings, consists of a jaw-shaped casting M, arranged to externally embrace the jaws E E and a part of the draw-head. This safety-jaw lock is cast in a single piece with a flat-top plate m , the pendent jaws m' , and the ears or lugs m^2 . Said safety-jaw lock is pivotally attached to a suitable block or support M', attached to the platform or to the box of a car, the lock being attached by suitable bolt or bolts passing through the ears m^2 and said lock being so hung or pivoted that when it is lowered the jaws m' will embrace the coupler-jaws E E to prevent them from spreading, and when said lock is raised the jaws m' will be free from the coupler-jaws E E, and the latter may be opened or spread to permit the introduction or removal of the coupling-bar. In connection with this safety-jaw lock M, I provide means for raising or lowering the lock from the side or top of a car. This is preferably effected by means of an operating piece or block N, which is pivoted, as at n , to the front or to the platform of a car. Said operating-piece N has a cam or irregular-shaped groove n cut or otherwise formed in the lower side or edge thereof, and in said groove fits a finger N', which is fastened to the safety-lock N. Rigidly fastened to the pivoted operating-piece is the double-armed handle O, which extends horizontally from the piece N outwardly to

both sides of the car, and from this operating-piece rises the vertical handle P, which is fastened to the piece N and extends to the platform or roof of a car.

- 5 It will be seen that the pivoted cam-formed piece N may be operated from either side or top of a car, and by partially rotating the piece N in one direction its cam operates the finger to raise the safety-lock and release the
10 coupler-jaws, but by turning the pivoted block in the reverse direction the cam of the block depresses the finger and lock so that the lock engages the coupler-jaws and prevents them from spreading.
- 15 The operation is as follows: To introduce the coupling-bar, the safety-lock is raised and one head on the coupling-bar is inserted between the jaws, either by operating the lever I to open the jaws or by pressing the head
20 between the jaws, after which the safety-lock should be lowered into engagement with the jaws. When the car equipped with a coupling-bar approaches another draw-head of similar construction, the other head of the
25 coupling-bar passes into the draw-head by forcing apart the jaws and forcing back the ejector D therein, the jaws being drawn together by the spring F, thus automatically coupling the cars. When the safety-locks of
30 both draw-heads are lowered, the coupler-jaws are locked and the coupling-bar cannot be withdrawn accidentally or otherwise from the draw-heads. To release the coupling-bar, it is necessary to raise the safety-lock and op-
35 erate the cam-shaft to open the jaws, after which the cars may be separated or drawn apart. When the coupling-bar is in only one draw-head, the operator should release the lock and open the jaws by the cam H, where-
40 upon the ejector D is pressed forward to force the coupling-bar out of the draw-head.

I am aware that changes in the form and proportion of parts and in the details of construction of devices herein shown and described
45 as the preferred embodiment of my invention may be made by skilled mechanics without departing from the spirit or sacrificing the advantages of my invention, and I therefore reserve the right to make such modifications
50 and alterations as fairly fall within the scope of my invention.

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

- 55 1. In a car-coupler, the combination of a draw-head having open sides, laterally-movable jaws mounted in said open sides of the draw-head to lie substantially flush therewith when closed, a jaw-shaped safety-lock
60 mounted externally on the draw-head to embrace the same and the laterally-movable jaws, and means for raising or lowering said safety-lock, as and for the purposes described.
2. In a car-coupler, the combination with a
65 draw-head, and the coupler-jaws, of a pivoted

jaw-shaped safety-lock, a cam-formed operating-piece having operative connections with said safety-lock, and means for moving the operative piece to adjust the safety-lock, as and for the purposes described.

3. In a car-coupler, the combination with a draw-head, and the coupler-jaws, of a jaw-shaped safety-lock pivoted on said draw-head to embrace the latter and the coupler-jaws when lowered, an operating-piece pivoted
75 above the safety-lock and having a cam-groove formed therein, and a finger attached to the safety-lock and fitted in the cam-groove of the operating-piece, as and for the purposes described.

4. In a car-coupler, the combination with a draw-head and the coupler-jaws, of a pivoted cam-formed operating-piece provided with projecting handles, a jaw-shaped safety-lock, and connections between the safety-lock and
85 the operating-piece, as and for the purposes described.

5. The combination with laterally-movable coupler-jaws, of a safety-lock arranged to engage with said jaws, a cam-formed operating-
90 piece, a finger attached to said safety-lock and engaging with the operating-piece, and means for shifting the operating-piece, as and for the purposes described.

6. The combination with a draw-head, of
95 the coupler-jaws provided with the thickened and flared front ends, which form the shoulders f' , and with the recesses f'' which are curved or rounded in vertical planes, and a coupling-bar having the enlarged heads there-
100 of formed with rounded or curved rear edges which are adapted to fit in the recesses f'' of the coupler-jaws, whereby the head of the coupler-bar is adapted to rock or oscillate in a vertical plane when confined between and
105 within the front ends of said coupler-jaws, as set forth.

7. The combination with a draw-head, and twin jaws hung therein, of a cam-shaft hav-
110 ing a cam arranged to act on the jaws, a rock-shaft, the levers attached to the cam-shaft and the rock-shaft and connected together by a link, and a double-armed lever fastened to the cam-shaft, as and for the purposes de-
115 scribed.

8. The combination of a draw-head having in its upper and lower sides the longitudinal grooves terminating in stop-shoulders, the spring-controlled jaws hung in said draw-
120 head, the longitudinal guides within the draw-head, and the spring-pressed ejector fitted in the grooves of the draw-head and between the longitudinal guides therein, substantially as and for the purposes described.

In testimony whereof I affix my signature
125 in presence of two witnesses.

JOHN G. GREEN.

Witnesses:

D. P. CALDWELL,
J. H. EDMONSTON.