

No. 646,396.

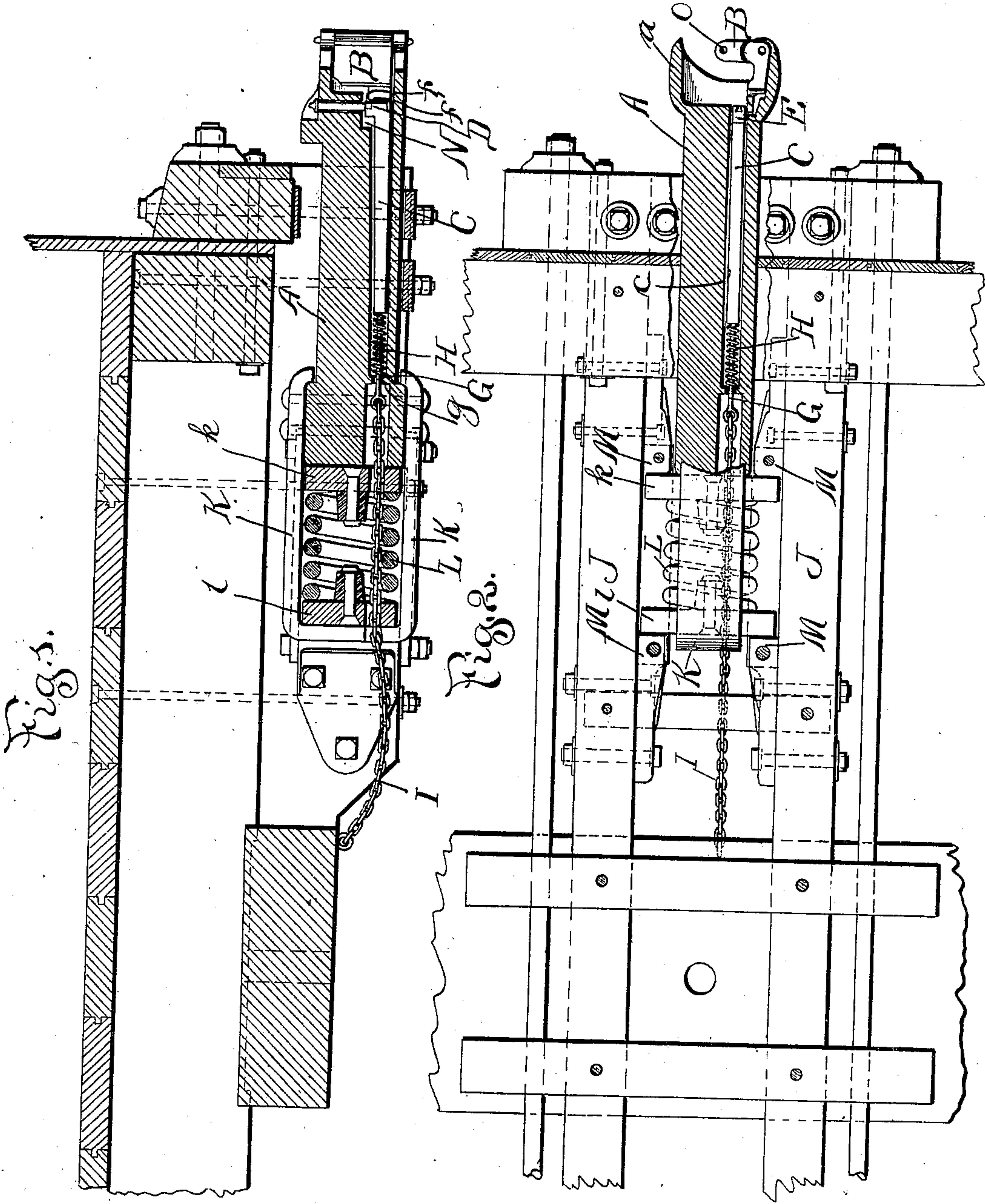
Patented Mar. 27, 1900.

A. O. ARNOLD.
CAR COUPLING.

(Application filed Aug. 19, 1899.)

(No Model.)

2 Sheets—Sheet 1.



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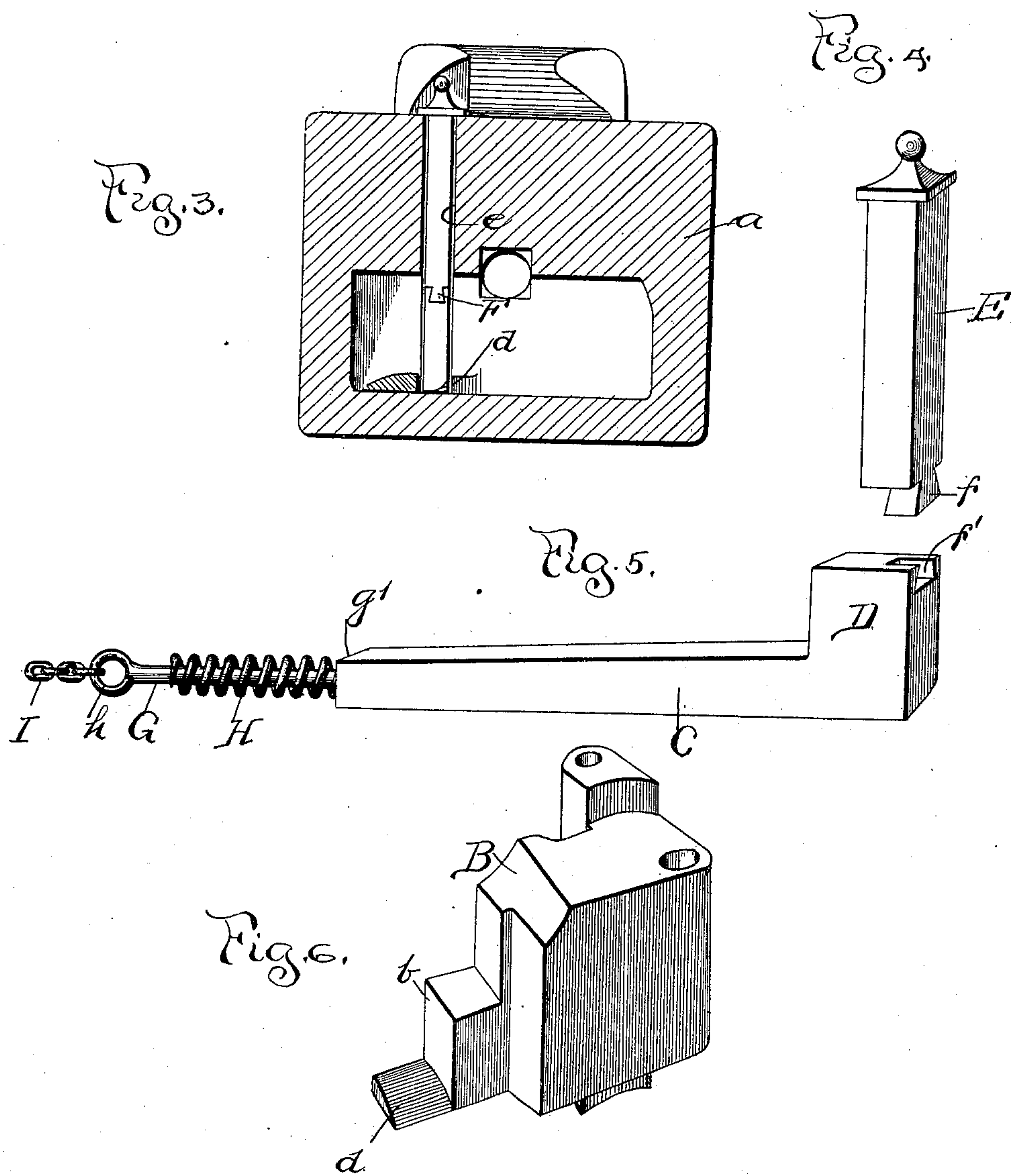
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UNITED STATES PATENT OFFICE.

ANDREW O. ARNOLD, OF GALESBURG, ILLINOIS.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 646,396, dated March 27, 1900.

Application filed August 19, 1899. Serial No. 727,771. (No model.)

To all whom it may concern:

Be it known that I, ANDREW O. ARNOLD, a citizen of the United States, residing at Galesburg, in the county of Knox and State of Illinois, have invented certain new and useful Improvements in Car-Couplings, of which the following is a specification.

My invention relates to certain new and useful improvements in car-couplings; and it has particular reference to safety appliances for draw-bars.

The primary object of my invention is to provide for automatically uncoupling the car and preventing the draw-bar from becoming separated from the car by reason of any abnormal strain on the coupling, which results in loosening the draw-bar from its fastenings.

My invention also has for its object to provide a locking device which is adapted to operate normally to lock the knuckle of an ordinary Master Car-Builders' coupling in place and which releases the knuckle from its locked position whenever the draw-bar is loosened from its fastenings.

Another object of the invention is to provide a device for securing the draw-bar to the car after it has become loosened from its ordinary fastenings and at the same time release the locking device, so as to open the coupling.

Owing to abnormal strains on the coupling it often occurs that the draw-bar of one coupling is loosened from its fastenings while still coupled to the draw-bar of the other car and separated from its car, the train parting at this point and the draw-bar falling down on the track to present an obstruction, which is liable to occasion a wreck. It is to provide against such accidents that my invention is particularly directed, and I intend that the invention may be embodied in draw-bar and couplings of different type to which the same may be adapted; but for convenience I have illustrated in the accompanying drawings the ordinary and commonly-employed Master Car-Builders' coupler, in which—

Figure 1 is a longitudinal sectional view of a portion of a car having my invention applied to its draw-bar. Fig. 2 is a top plan view, a portion of the draw-bar being shown in section. Fig. 3 is a transverse sectional view on the line 3 3 of Fig. 1. Fig. 4 is a de-

tail view of the lifting-pin. Fig. 5 is a detail view of the locking device. Fig. 6 is a detail view of the knuckle.

Referring to the drawings, in which like letters of reference denote corresponding parts in all of the figures, A designates the draw-bar, which is provided on its forward end with the coupler-head *a*, at one side of which the knuckle B is pivotally mounted in the usual manner. The tailpiece *b* of this knuckle is adapted to swing inward in the position shown in Fig. 2 and be locked in that position by means of a device located within the draw-bar, said locking device comprising a bar C, operating in a longitudinal opening *c* in the draw-bar and provided with a locking-head D, arranged in the path of movement of the tailpiece *b* of the knuckle in its inwardly-swinging movement. In order that the tailpiece of the knuckle may pass the head on the locking device, I provide the said tailpiece with a projection *d*, provided with a cam-face or inclined surface, adapted to engage the beveled edge *d'* of the locking-head. By this construction it will be observed that when the knuckle is swung inwardly the inclined upper face of the projection *d* on the tailpiece will engage the beveled edge *d'* of the locking-head and lift the locking-head sufficiently to permit the knuckle to swing back into its locked position, as shown in Fig. 2, whereby the locking-head will fall back into place, as shown in said figure, and securely lock the knuckle, thereby effecting a coupling.

A lifting-pin E is provided for releasing the locking-head from engagement with the knuckle to permit the knuckle to swing outward and uncouple the cars, this lifting-pin being arranged to operate vertically in an opening *e* in the coupler-head and being connected with the head of the locking device by means of a loose dovetailed joint F. The upper end of this lifting-pin, which projects above the coupler-head, may be connected with any preferred device for operating the pin to couple the cars, such devices being well known and used in many varieties, for which reason it is not considered necessary to illustrate the same. I prefer to provide the tenon *f* of the dovetailed joint on the lower end of the lifting-pin and the mortise

or cavity *f'* in the upper forward end of the locking-head, as shown in their relative positions in Figs. 4 and 5; but these parts may be reversed without departing materially from the invention.

The rear end of the locking-bar C is provided with an extension G in the form of a rod, which may be connected with the bar as a separate piece or formed integrally therewith and drawn down to a smaller size. This bar extends laterally through a collar *g*, formed in the draw-bar, and between this collar at one end and the shoulder *g'*, constituted by the end of the draw-bar, at the other end the spring H is confined, this spring operating normally to throw the draw-bar and its head forward into locking position. The rear end of the extension G is provided with an eye *h*, to which one end of a slack chain I is connected, the other end of said chain being fastened to the car-frame, as shown in Fig. 1.

The draw-bar is arranged to operate between the beams J of the car, and it is provided at its rear end with a U-shaped bracket K, whose ends are fitted over the rear end of the draw-bar and fastened thereto by bolts. A coiled spring L of high tension is fitted between the head *k*, adjacent to the draw-bar, and the head *l* at the loop of the bracket, these spring-heads projecting beyond the sides of the bracket and draw-bar to engage the stops M on the beams J of the car-frame, thereby constituting the fastening device by means of which the draw-bar is maintained in its proper position within the frame of the car under all normal conditions, the projecting spring-heads operating within the limits constituted by the stops M. The slack fastening-chain I passes through the spring L and openings provided for it in the spring-head *l* and the bracket K.

This being the general construction of the particular embodiment of my invention illustrated in the drawings, the operation thereof will be readily understood by those skilled in the art and may be briefly described as follows: In the normal position of the coupler the knuckle will be open, (not shown,) and when two cars are brought together the knuckle will be swung forward into the position shown in Fig. 2, the projection *d* engaging and lifting the locking-head D in this movement, passing the locking-head, and being secured in position thereby. When it is desired to uncouple the cars, the lifting-pin is raised sufficiently to release the locking-head from engagement with the tailpiece, thereby freeing the knuckle, which may be swung outwardly to uncouple the cars at once; but my invention is particularly intended to prevent the draw-bar from becoming wholly disconnected from the car by reason of its fastenings breaking. If an abnormal strain is placed upon the couplings and its fastenings are broken, so that the draw-bar moves forward beyond the normal limit of its forward movement, the slack in the

chain I will be taken up and pulling on the locking bar and head, which remain stationary after the chain is taut, while the draw-bar, carrying the lifting-pin with it, moves outward, the lifting-pin will be separated from the locking-head, which moves backward into the recess N provided for it in the coupler-head, whereupon the knuckle is free to swing out and uncouple the cars, the draw-bar being prevented from falling away from the car by the chain I. The dovetailed joint between the lifting-pin and the locking-head forms a very simple connection for these parts and of such a character that the locking-head and lifting-pin can be separated without in any way injuring the same.

The knuckle is provided with the usual openings O, whereby the coupling can be effected by means of a link and pin.

My invention provides a very simple and effective safety device against accidents of the character hereinbefore mentioned. If the draw-bar is left free to fall upon the track after its ordinary fastenings are broken, there is great danger of the draw-bar falling in such a position on the track as to derail the "wild" end of the train; but by providing my improved attachment the coupling is immediately opened and the loosened draw-bar is prevented by the chain, which acts as an emergency fastening, from becoming separated from the car.

I am aware that changes in the form and proportion of parts and in the details of construction of my invention may be made without departing from the spirit or sacrificing the advantages thereof, and I therefore reserve the right to make all such changes as fairly fall within the spirit and scope of the invention.

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

1. The combination with a draw-bar, of a locking device arranged therein, comprising a bar extending rearwardly within the draw-bar and formed at its outer end with a dovetail recess, and a lifting-pin connected with the locking device by a dovetail tenon fitting said recess, substantially as and for the purpose described.

2. The combination with a draw-bar provided with a coupler-head, of a knuckle pivotally mounted within the coupler-head and having a tailpiece, a locking device arranged in the path of movement of said tailpiece and adapted to engage and lock the same, said locking device comprising a bar extending rearwardly through an opening in the draw-bar, a spring operating on said bar to project it forward and a slack chain normally connected to the end of said locking-bar and to the frame of the car, substantially as and for the purpose described.

3. The combination with a draw-bar provided with a coupler-head, of a knuckle pivotally mounted in said head and having a tail-

piece, a locking device arranged in the path of movement of said tailpiece and adapted to engage and lock the same, a lifting-pin having a loose connection with the locking device, a bar forming part of said locking device extending rearwardly through an opening in the draw-bar and provided with an extension on its rear end, a collar *g*, a spring arranged on said extension between the locking-bar and said collar and a chain connected to the end of the extension and to the frame of the car, substantially as and for the purpose described.

4. The combination with a draw-bar provided with a coupler-head, of a knuckle pivotally mounted within the coupler-head and provided with a tailpiece, a locking device

comprising a head arranged in the path of movement of said tailpiece and a bar extending rearwardly from said locking-head through an opening in the draw-bar and provided with an extension, a spring operating on said extension to hold the locking-head normally forward in the path of the tailpiece, a slack chain connected to the end of said extension and to the car-frame, and a lifting-pin connected to the locking-head by a dovetailed joint, substantially as and for the purposes described.

ANDREW O. ARNOLD.

Witnesses:

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