

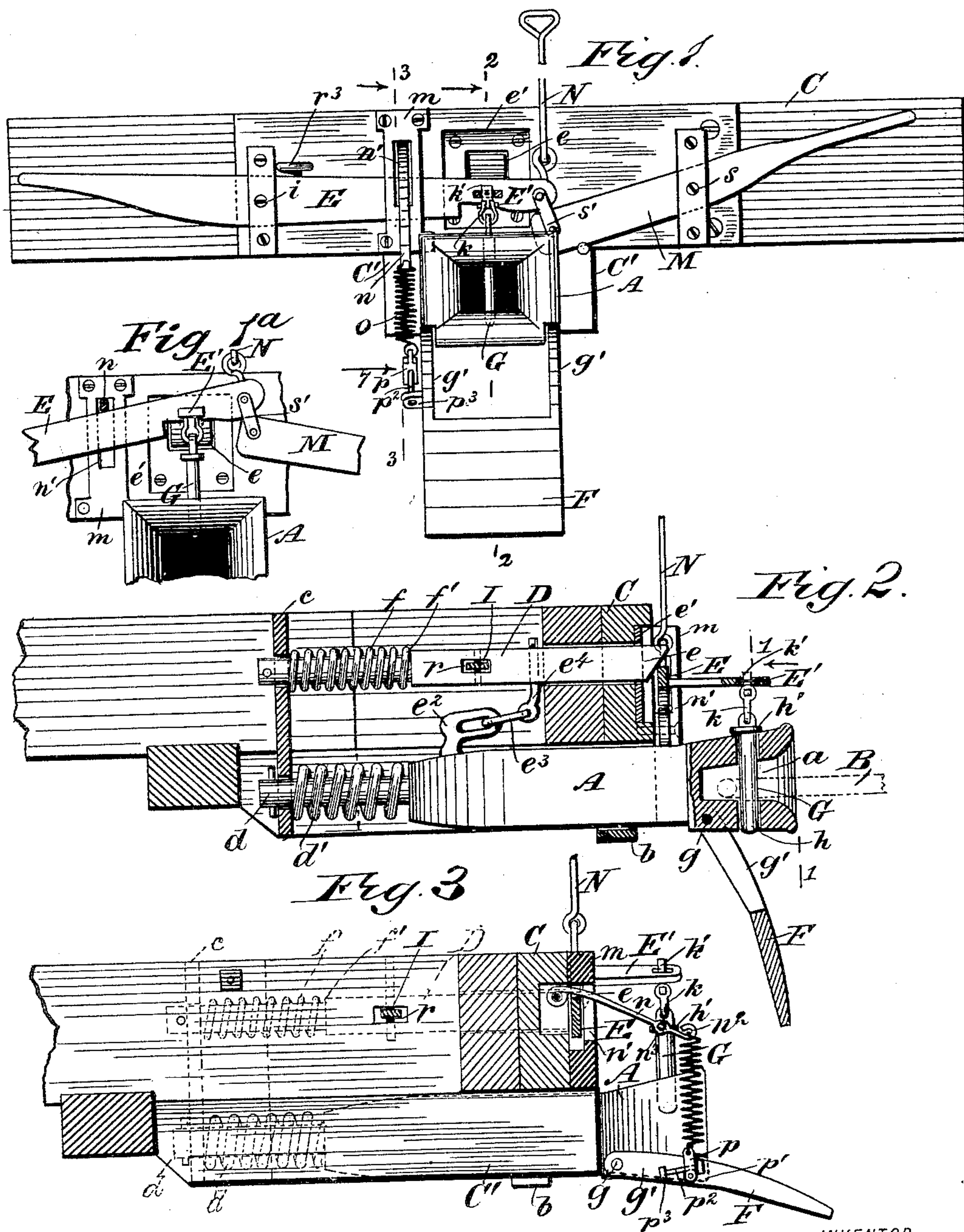
(No Model.)

2 Sheets—Sheet 1.

W. BENTLEY.
CAR COUPLING.

No. 460,841.

Patented Oct. 6, 1891.



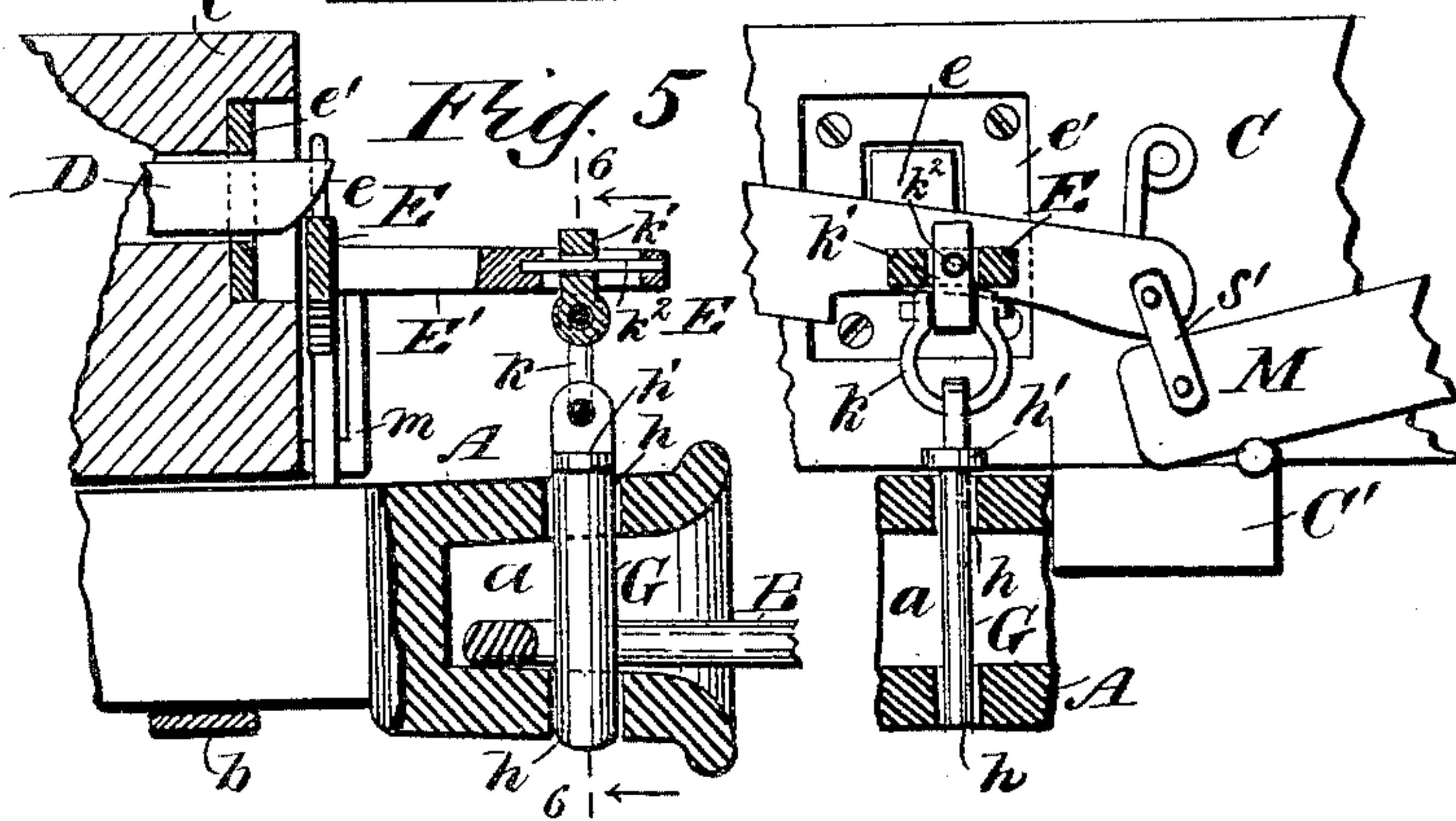
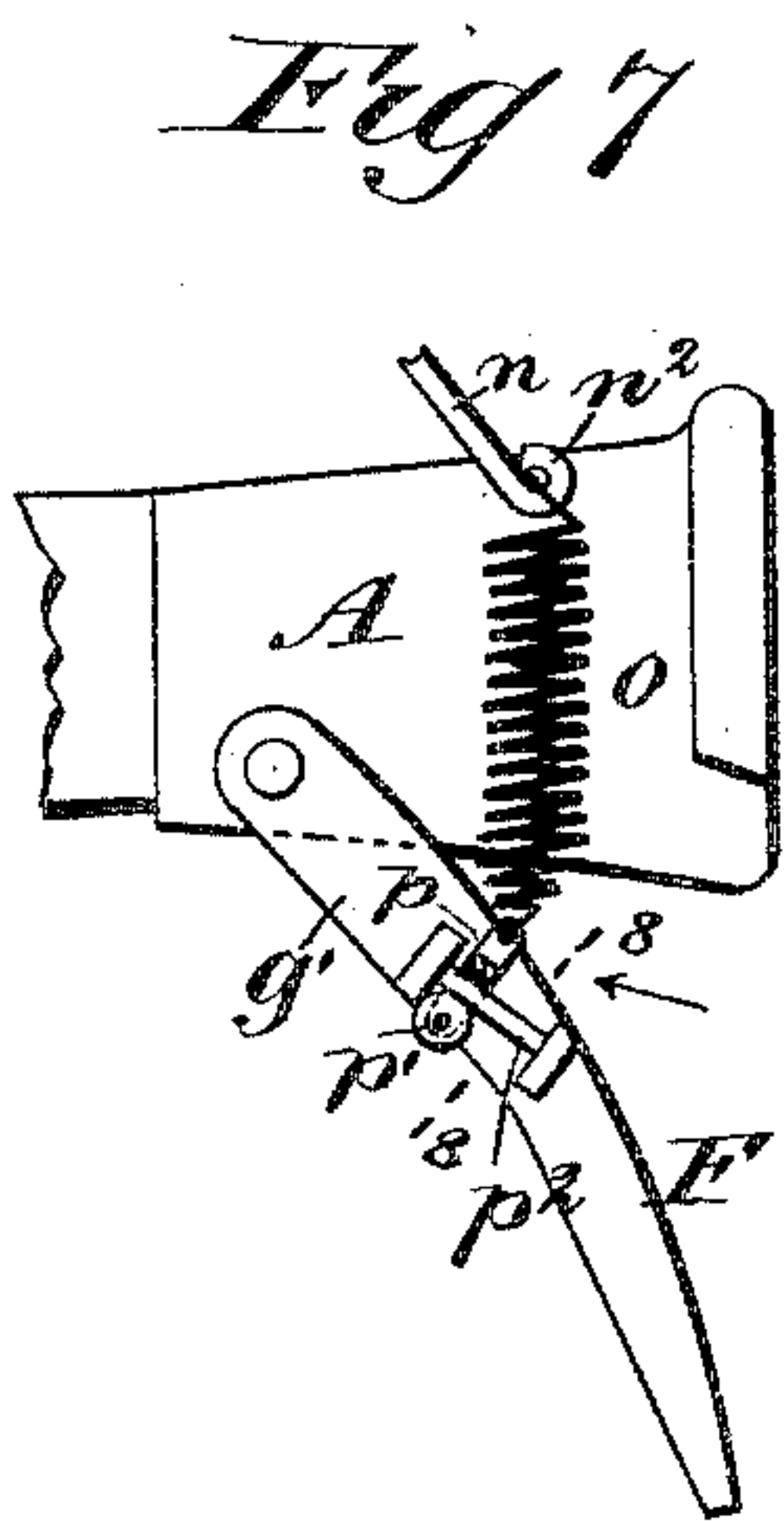
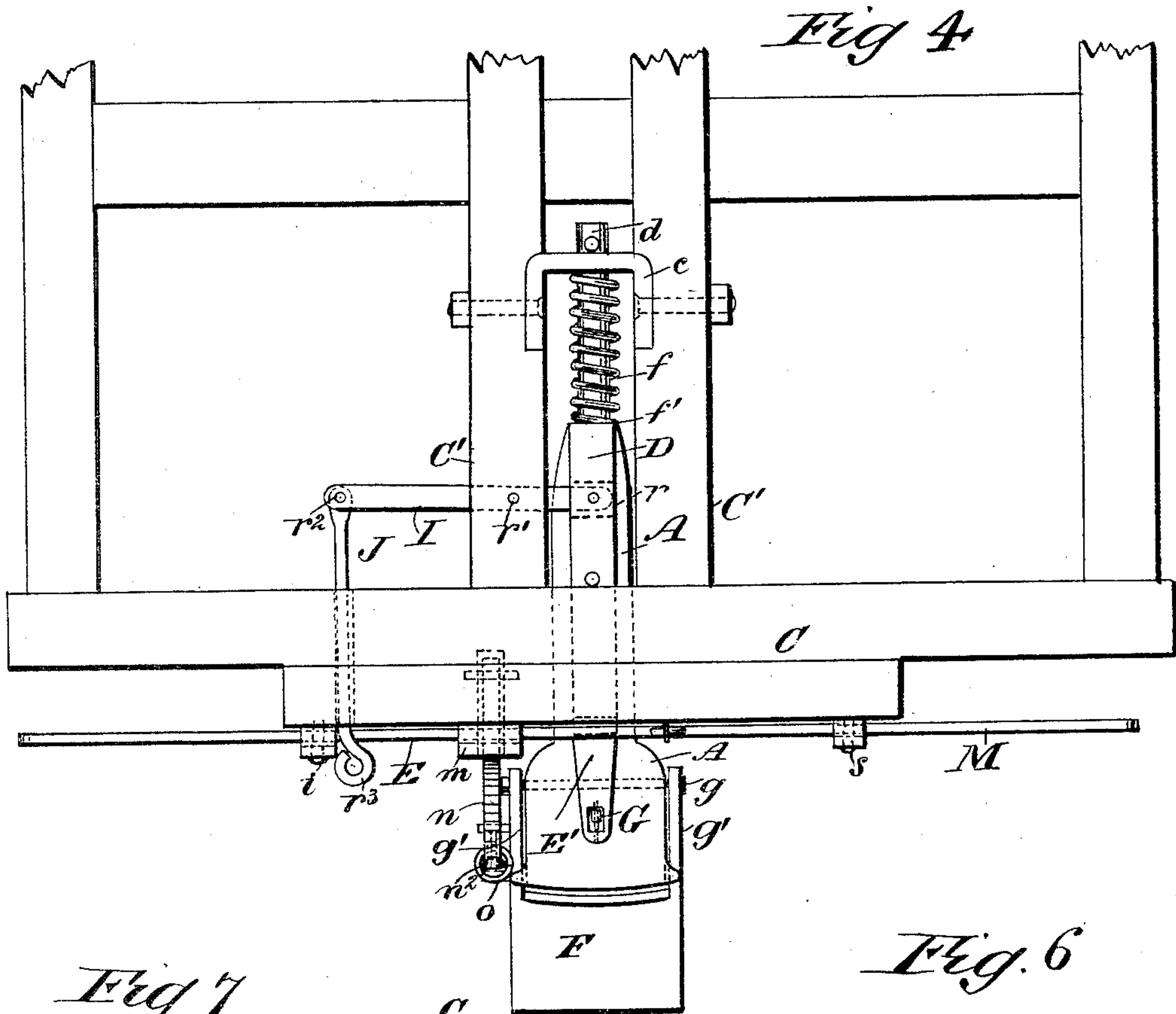
WITNESSES:
Francis McArdle,
L. Sedgwick

INVENTOR
W. Bentley
BY *Munn & Co*
ATTORNEY.

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UNITED STATES PATENT OFFICE.

WILLIAM BENTLEY, OF LETHBRIDGE, CANADA.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 460,841, dated October 6, 1891.

Application filed June 4, 1891. Serial No. 395,020. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM BENTLEY, of Lethbridge, North-West Territory, Canada, have invented a new and useful Car-Coupling, of which the following is a full, clear, and exact description.

The object of this invention is to improve the construction of the car-coupling previously invented by me, and for which a patent was allowed December 6, 1890.

To this end my present invention consists in improved details of construction and combinations of parts, as is hereinafter 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 front elevation of a car-frame with the improved coupling device thereon, shown with the parts adjusted to depress the coupling-pin in the draw-head, partly in section on the line 1 1 in Fig. 2. Fig. 1^a is a front view of a portion of the car-frame, showing the pin-lifting mechanism broken and part in section, the coupling-pin being in elevated adjustment. Fig. 2 is a sectional side view of the car-frame broken at the rear and the improvements thereon, some parts broken and in dotted lines, the section being taken on the line 2 2 in Fig. 1. Fig. 3 is a longitudinal section of parts shown in Fig. 1, taken on the line 3 3 in said figure, the mechanism being in an uncoupled condition. Fig. 4 is a plan view of the end portion of a car-frame with the improved coupling device thereon. Fig. 5 is a broken sectional side view of one end of a car-frame, taken through the attached improved coupling near its transverse center, showing the parts in coupled condition, with a link shown broken. Fig. 6 is a front view of the car-frame broken and a transverse section of the draw-head, taken on the line 6 6 in Fig. 5. Fig. 7 is a side view of the coupling draw-head broken away rearwardly, showing the relative position of parts viewed in the direction of the arrow 7 in Fig. 1; and Fig. 8 is a cross-section of the parts shown in Fig. 7, taken on the line 8 8 in said figure in the direction of an adjacent arrow.

The draw-head A is preferably cast into form and is rectangular in cross-section, having a chamber in its forward portion, as at *a*, for the free introduction therein of a coupling-link B, the outer end of the draw-head being suitably flared to facilitate the entrance of the link.

The body of the draw-head A is supported to slide a limited distance longitudinally between the frame-timbers C' by the cross-plate *b* and an abutment-plate *c*. The latter, having a U shape in cross-section, is secured between the timbers C', and is perforated to allow the guide-bar extension *d* of the draw-head to slide therein. Said bar is preferably made cylindrical and carries a spiral spring *d'* on it, which presses against the plate *c* and draw-head body, so as to normally project the draw-head and permit it to yield under pressure on its front end.

There is a sliding latch-bar D located between the timbers C' above the draw-head A and in a parallel plane with it, as represented in Fig. 2, which has its front end *e* cut to slope inwardly and downwardly from the top outer edge. This end of the bar is loosely supported to move inwardly by a plate *e'*, through which it is inserted, said plate having a rectangular aperture adapted to receive the similar-shaped body of the latch-bar, as represented in Figs. 1, 5, and 6.

The rear end portion of the bar D is rendered cylindrical and passes loosely through a round hole in the abutment-plate *c*, which is upwardly extended between the timbers C' to permit such an engagement, and a spiral spring *f* is placed on the reduced rounded portion of the bar D between the abutment-plate and a shoulder *f'* on said bar, produced by its reduction, whereby the latch-bar is normally projected at its forward end a sufficient distance to allow its latching end *e* to be impinged upon from below by a pin-lifting lever E, as will be further explained.

As a means to enter an approaching coupling-link B, held projected from a similar coupling or one of any other type that is adapted to support an elongated coupling-link in a substantially horizontal plane for such an insertion, there is an apron F provided, which

is secured to the forward portion of the draw-head A, near its lower edge, by a transverse pivot-bolt *g*. (Shown in Fig. 4 by dotted lines.) The apron F is preferably given the form shown in Figs. 1 and 2, consisting of a curved plate having two limbs *g'*, extended from the edge that engages the front lower edge of the draw-head A when the apron is in elevated adjustment. Said limbs, which are parallel with each other, are made to loosely embrace the side walls of the draw-head, and near their inner ends are transversely perforated to receive the pivot-bolt *g* before mentioned.

The draw-head A is vertically perforated at a short distance from its front edge, as at *h* in Figs. 5 and 6, for the free introduction of a coupling-pin G, said apertures extending through the top and lower walls of the draw-head near its transverse center. The coupling-pin G is straight in the body and of a length to pass through the draw-head when inserted in place to secure a link B, its depression being limited by the collar-flange *h'* on its upper portion, that will rest on the top wall of the draw-head when the pin is lowered.

On the front end wall of the car or its frame the pin-lifting lever E is pivoted, as at *i*, a proper distance from each end. The outer end portion of the lever E is extended sufficiently to allow it to be readily manipulated from the side of the car when this is necessary to manually release the coupling-pin G, and, as indicated in Fig. 1, the inner end portion of the lever E is extended to project its upper straight edge below the latching end *e* of the latch-bar D. There is a lifting-arm E' formed on or secured to the exterior surface of the lever E, which arm projects outwardly at a right angle to the lever and directly above the upper end portion of the coupling-pin G, to which it is connected by the clevis *k*, that is loosely secured to each of these parts, so as to allow the coupling-pin to rock thereon. To further facilitate the free motion of the coupling-pin where it is attached to the arm E' the latter is slotted longitudinally a short distance and the clevis *k* bolted loosely on a slide-block *k'*, that is perforated to receive a guide-rod *k²*. The latter-named having a central position in the slot of the arm E' is there-to secured by its ends, as shown in Fig. 5, whereby the clevis is adapted to slide a short distance on the arm, and thus compensate for any longitudinal movement of the draw-head when it is impinged upon by another draw-head in the act of coupling two cars together.

The lifting-lever E is loosely embraced by a guide-plate *m*, that is cut away on its inner surface a proper distance lengthwise to allow the lever to vibrate between the guide-plate and the car-frame when the plate is secured on the latter, as shown in Figs. 1 and 2.

The front cross-timber C of the car-frame

is recessed where the guide-plate *m* is secured on it, so as to permit the introduction and pivotal support in said recess of a rocking arm *n*, which projects outwardly through a longitudinal slot *n'* in the plate *m*, its length being so proportioned that its outer end *n²*, whereon an eye is formed, will receive the upper end of a spiral spring *o*, that is secured loosely to it, an integral eye *n³*, formed in the arm near the eye *n²*, affording means for altering the position of the spring on the arm, if required. A proper relative length and strength is given to the spiral spring *o* to adapt it to sustain elastically the apron F, the connection between these parts being shown in Figs. 1, 3, and 7, and consists of a traveling block *p*, having an anti-friction roller *p'*, pivoted between two depending parallel limbs of said block, which extend from a main limb that is transversely perforated to receive the lower end of the spring *o*, that is thereto attached, there being a slide-bar *p²* held projected from and parallel to the side of the apron F by two ears *p³* on the apron, so as to permit the sliding support of the traveler-block and its roller on the bar named.

It is essential for the proper operation of the device that the lifting-lever E should be sustained by the end of the latch-bar D when the pin G and apron F are in an elevated condition and that there should be means furnished for the release of the lever E manually when the latter is engaged by the latch-bar, as indicated in Fig. 1^a. To this end the latch-bar is laterally apertured, as at *r* in Figs. 2 and 4, and the end of a link-bar I is pivoted in the opening. Said bar having a pivotal support at *r'* on the car-frame timber C' projects outward therefrom a proper length and at the outer terminal *r²* is jointed to a pull-bar J, that is extended at a right angle to the link through a perforation in the car-frame timber C, terminating in a ring or similar handle-piece *r³*, that lies above the upper edge of the lifting-lever near its pivot-point, so that draft force applied to the handle-piece *r³* will move the latch-bar D inwardly and release the lever E, that has a seat upon said bar, when the car-coupling is adjusted to receive an approaching link.

On the front of the car-frame, opposite to the inner end of the lifting-lever E, a tripping-lever M is pivoted, as at *s* in Fig. 1, and connected by a link *s'* to the end of the lever E, said lever M being designed to afford means to release two coupled cars from the side of one car opposite the main lifting-lever, which may be effected if the outer end of the tripping-lever is depressed sufficiently to raise the inner end of the lifting-lever, thereby withdrawing the coupling-pin and simultaneously raising the rocking arm *n* and attached apron F into the position shown in Fig. 3 for recoupling the car when this is required.

As it is necessary that the latch-bar D be connected loosely with the draw-head A, so

as to release the coupling-pin G when two draw-heads come together, and thus drop the pin through an entered link, a suitable connection is provided, as shown in Fig. 2, and consists of a bent arm e^2 , that projects from the upper side of the draw-head between the timbers C' forwardly, having a longitudinal slot in it to receive the link e^3 , which is adapted to slide in said slot rearwardly, the front end of the link loosely engaging with the depending end of an eyebolt e^4 , which is secured to the latch-bar. The relative position of the parts just mentioned is such as will cause the link e^3 to have bearing contact on the front terminal end of the slot in the bent arm e^2 when the coupling mechanism is in a normal condition or when the latch-bar is projected below the pin-lifting lever E to hold it and the pin G elevated. Consequently the rearward movement of the draft-bar may take place when there is draft strain on the draw-head and the latch-bar will be drawn inwardly when the draw-head is similarly moved.

Upon the inner end of the lifting-lever E a vertical rod N is loosely connected, which rod is projected upwardly to the roof of a box-car to allow the lever and attached coupling-pin to be manipulated and release the latter, when this is desired, by an operator on the car-roof.

In operation, the approach of two cars having this improved coupling with a coupling-link B, extended from one coupling to enter another, will cause the link to slide on the apron F and enter the draw-head of the link-receiving coupling, which apron will slide below the draw-head having the link coupled to it, and thus permit the two draw-heads to impinge at their front ends, which contact will shove the draw-heads inwardly a sufficient distance to release the latch-bar D and permit the coupling-pin to drop into place, so as to connect the adjacent draw-heads.

It will be seen that the provision of the apron F with the traveling block p and its support, as has been described, will allow said apron to drop freely, the block sliding back into the position shown in Fig. 7 when the other parts are automatically adjusted to effect the coupling of two draw-heads, as stated.

I do not herein broadly claim the use of a latch-bar located above a draw-head, as this feature is shown in my allowed patent in a different connection of parts; nor is the apron F herein broadly claimed, as it is also shown in said allowed patent.

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

1. In a car-coupling, the combination, with a sliding draw-head and a spring for moving it outwardly, of a sliding latch-bar above the draw-head also spring-actuated outwardly, and a connecting-link loosely secured to the draw-head and latch-bar to allow the latch-bar to move independently of the draw-head when

draft strain is upon the latter, substantially as set forth.

2. In a car-coupling, the combination, with a draw-head supported to slide longitudinally and a spring holding the draw-head projected, of a latch-bar supported above the draw-head and adapted to slide parallel therewith, a spring therefor to move it outwardly, an abutment-plate engaged loosely by both the draw-head and latch-bar, a bent slotted arm on the draw-head, a depending eyebolt on the latch-bar, and a link connecting the arm and bolt, substantially as described.

3. In a car-coupling, the combination, with a draw-head supported to slide longitudinally and a sliding latch-bar above the draw-head, both forwardly actuated by spiral springs, and an abutment-plate engaged by the draw-head and latch-bar, of a lifting-lever pivoted transversely on the end of the car, a projecting arm on the lifting-lever, a pendent coupling-pin loosely connected with the arm of the lever and passing through holes in the top and bottom walls of the draw-head, and a supplementary tripping-lever pivoted transversely of the car and extending oppositely from the tripping-lever and connected therewith by a link, substantially as described.

4. In a car-coupling, the combination, with a draw-head held to slide longitudinally on the car-frame, a spring for the draw-head, an abutment-plate loosely engaged by the draw-head, and a spring-actuated latch-bar also loosely engaging the abutment-plate and projecting its latching end forward of the end of the car, of a transverse lifting-lever pivoted on the car and adapted to latch on the latch-bar when its inner end is vibrated upwardly to rest thereon, an outwardly-extending arm on the lifting-lever at a right angle thereto, and a pendent coupling-pin clipped to a sliding block adapted to slide on the projecting arm of the lifting-lever and pass through holes in the top and bottom walls of the draw-head, substantially as described.

5. In a car-coupling, the combination, with a draw-head, a spring actuating the draw-head outwardly, and means for supporting the draw-head and receiving the impact of the rear end of the spring, of a latch-bar above the draw-head and parallel therewith, a spring pressing said bar outwardly, a bent arm on the draw-head slotted longitudinally to receive a link, a depending eyebolt on the latch-bar, a link connecting the arm and bolt, a lifting-lever pivoted on the end of the car and extending to one side of the same, a pendent pin loosely connected to a projecting arm on the lifting-lever and adapted to pass through aligning holes in the top and bottom walls of the draw-head when in lowered adjustment, and a pivoted tripping-lever projected oppositely from the lifting-lever, and a link connecting the opposing ends of said levers, substantially as described.

6. In a car-coupling, the combination, with a draw-head supported longitudinally on the

car-frame and an apron pivoted on the sides of the draw-head to swing upwardly and hang downwardly, of a rocking arm above the draw-head, hinged to the car at one end and
5 projected outwardly therefrom, a spiral spring on the outer end of the rock-arm, a sliding block on the lower end of the spring, having an anti-friction roller pivoted between two parallel depending limbs thereon, and a guide-rod held projected from the side of the apron 10 and loosely engaged by the sliding block and its roller, substantially as described.

WILLIAM BENTLEY.

Witnesses:

W. A. GALLIHER,

I. S. ALEXANDER.