(No Model.)

2 Sheets—Sheet 1.

J. S. WILLIAMS.

CAR COUPLING.

No. 559,245. Patented Apr. 28, 1896.

Fig. 2.

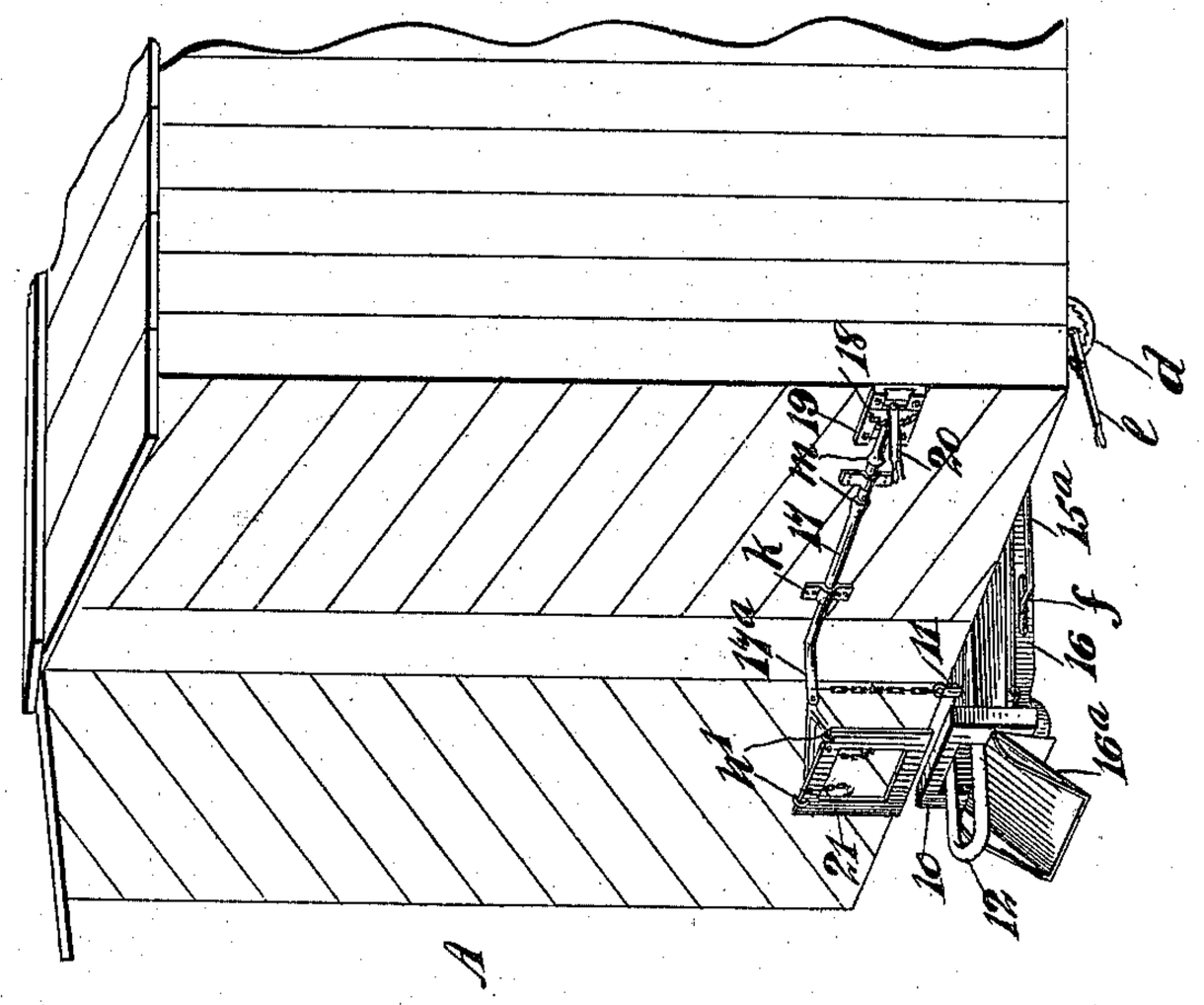
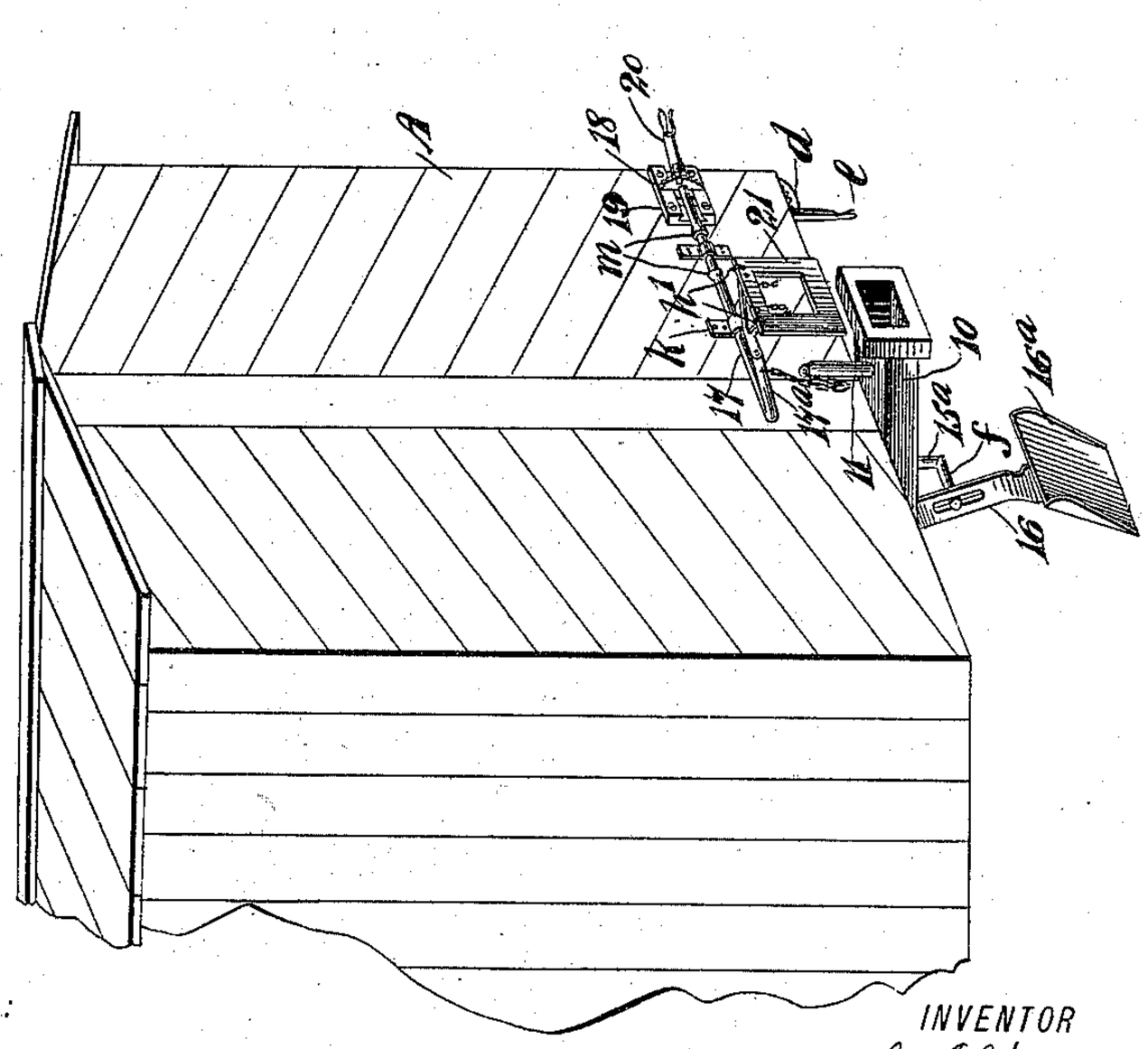


Fig. 1.



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(No Model.) 2 Sheets—Sheet 2.

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CAR COUPLING.

No. 559,245. Patented Apr. 28, 1896.

Fig: 3.

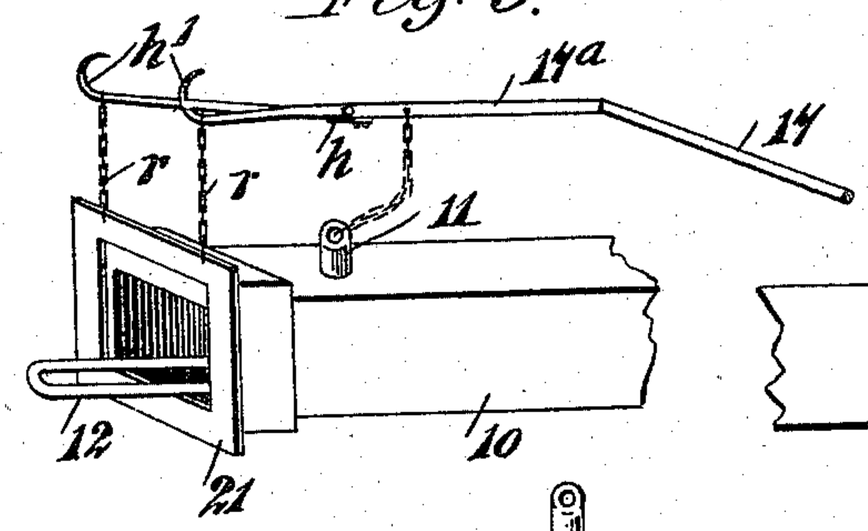


Fig: 4.

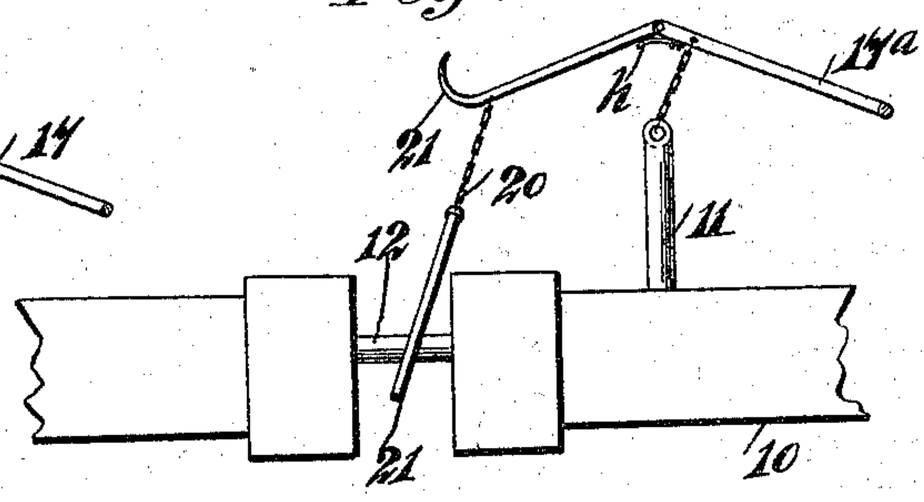


Fig: 5.

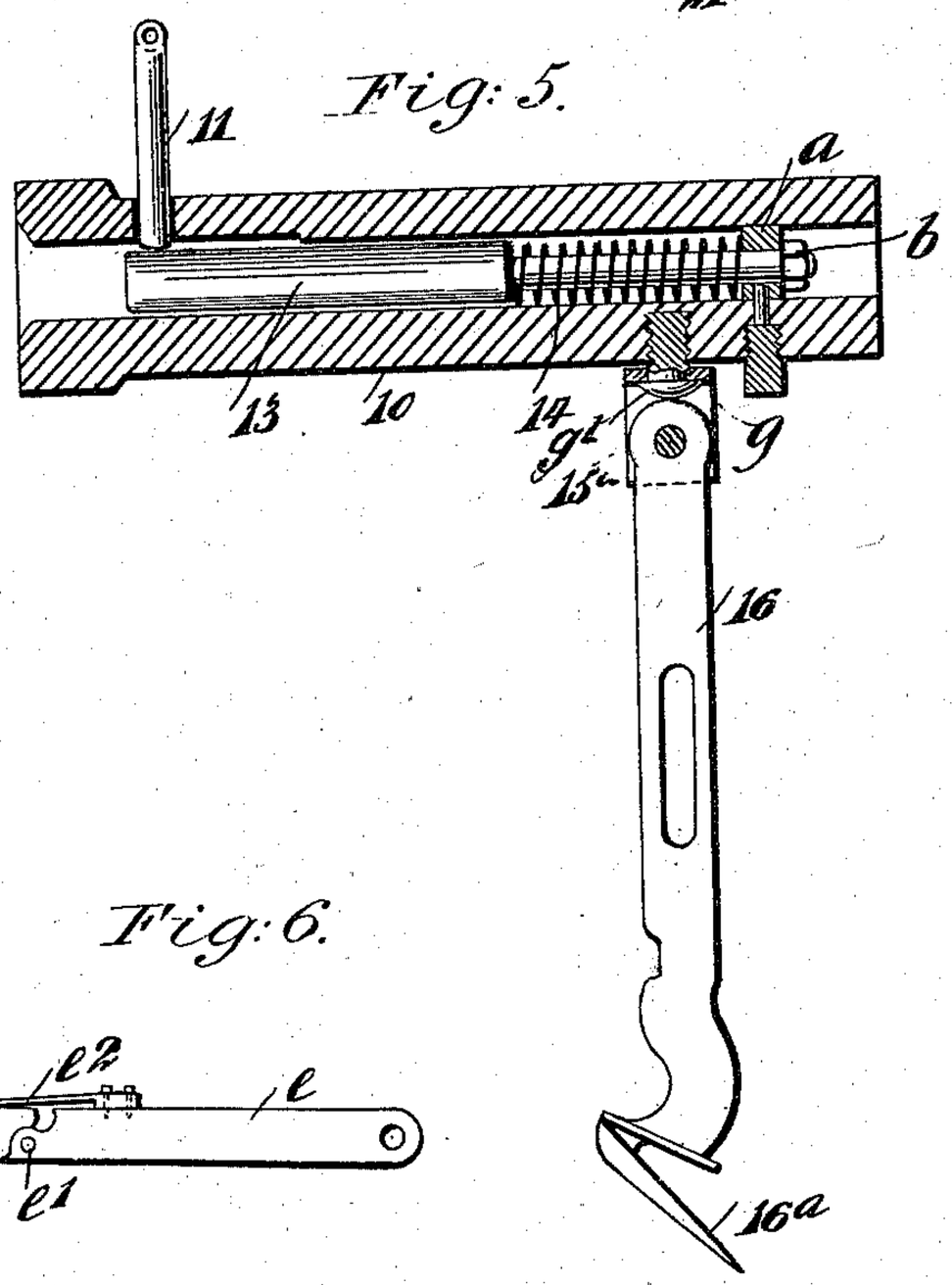


Fig: 6.

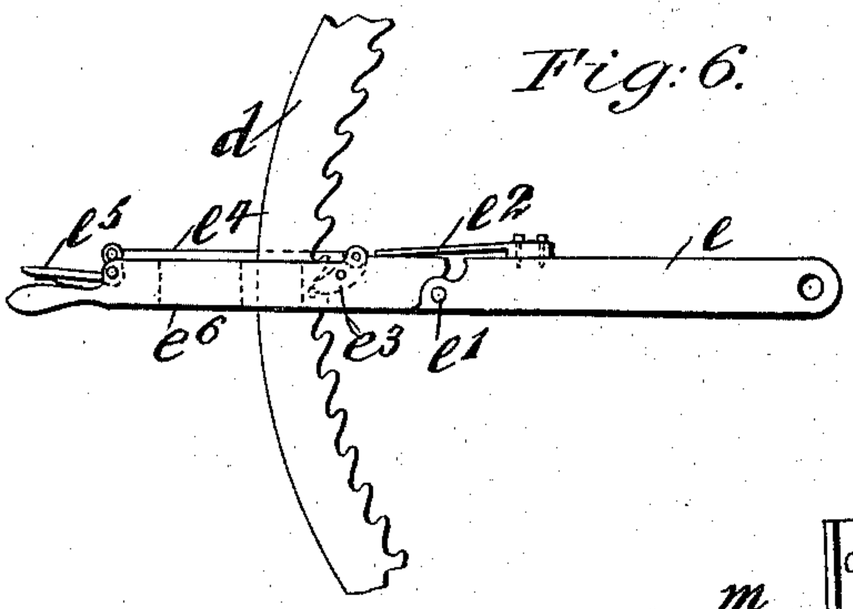


Fig: 7.

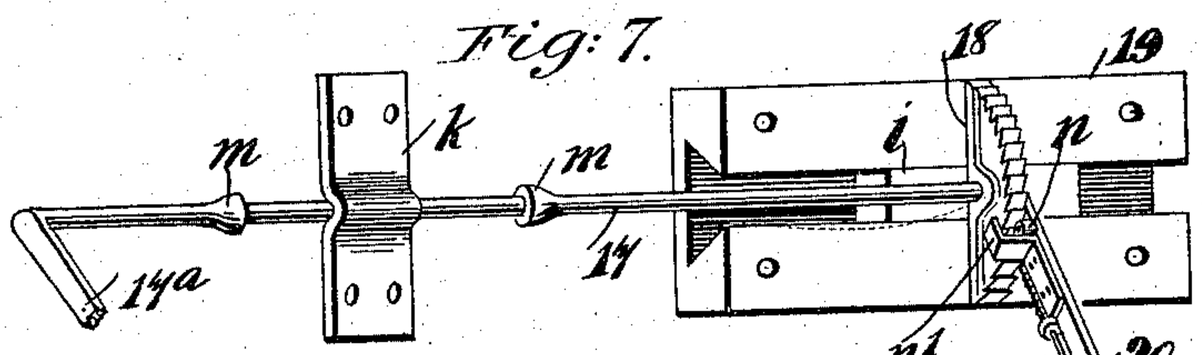
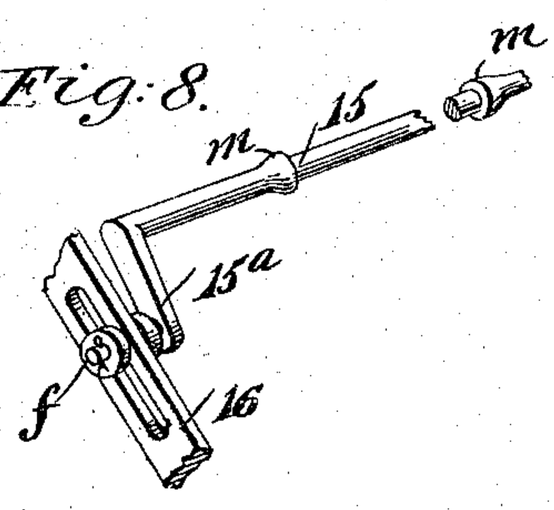


Fig: 8.



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UNITED STATES PATENT OFFICE.

JOHN S. WILLIAMS, OF KREBS, INDIAN TERRITORY, ASSIGNOR OF ONE-HALF TO TALLIE MILWEE AND CHARLES INNS, OF SAME PLACE.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 559,245, dated April 28, 1896.

Application filed January 15, 1896. Serial No. 575,620. (No model.)

To all whom it may concern:

Be it known that I, JOHN S. WILLIAMS, of Krebs, in the Choctaw Nation, Indian Territory, have invented new and useful Improvements in Car-Couplings, of which the following is a full, clear, and exact description.

This invention relates to car-couplings of the self-coupling type, and has for its object to provide novel, simple, and practical features of construction for a car-coupling of the indicated character which will adapt it to automatically couple with a similar coupling in a reliable manner, either on a curve or straight line of railroad, and also that will permit the ready release of two coupled cars having the improvements from the side of either car in a safe manner.

The invention consists in the construction and combination of parts, as is hereinafter described, and defined in the claims.

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

Figure 1 is a perspective view of an end portion of a car-body having the improvements shown in uncoupled condition. Fig. 2 is a perspective view of the side and end of a car-body, showing the novel coupling device differently adjusted. Fig. 3 is a perspective view of an enlarged detached detail of construction, showing a novel link-supporting device in connection with the coupling draw-head. Fig. 4 is an enlarged side view of two forward portions of similar draw-heads connected by a link and a link-controlling and pin-lifting device that is adjusted to elevate the coupling-pin. Fig. 5 is an enlarged sectional side view of the draw-head, a pin-supporting slide-bar spring-pressed forwardly to afford a seat for a vertically-slidable pin and a novel link-supporting apron hinged by its arm to the lower side of the draw-head. Fig. 6 is an enlarged fragmentary side view of an arched rack and a complete side view of a novel lever and pawl device provided to actuate and sustain a link-support that is a feature of the invention. Fig. 7 is an enlarged detached perspective view in part of an adjustable device for supporting the link-holder plate shown in Figs. 3 and 4, and Fig. 8 is an enlarged fragmentary perspective view of the arm for the link-supporting apron and of an operative rock-shaft therefor.

The improvements are applicable to car-couplings having a vertical drop-pin, and are shown in combination with a draw-head 10, that is adapted to receive a pin 11, that is vertically sustained free to slide in a perforation of the upper wall of said draw-head near its front end.

The draw-head is secured on a car-body A, that may be built as shown in Figs. 1 and 2, and any preferred means for attaching the draw-head thereto may be utilized, it being only essential that the latter be held to project a suitable distance in advance of the car-body below the same and at or near the transverse center of the car-frame.

The ordinary coupling-link 12 is provided for coupling two draw-heads having the improvements, and as it is essential that the link be held projected from the end of one draw-head to enter fairly into another draw-head on approaching cars novel means for effecting such a result are provided which will clamp the link and hold it level or inclined upwardly, downwardly, or laterally, as the needs of service may require.

The cylindric coupling-pin 11 is preferably rounded on its lower end so as to reduce the friction of its contact with the slide-bar 13, the latter being fitted to loosely reciprocate in the hollow body of the draw-head. On the diametrically-reduced rear portion of the bar 13 a spiral spring 14 is mounted, which presses its ends against the shoulders on the bar and on a stop-block *a*, which is secured in the draw-head at a correct point, the cylindrical rear end of the slide-bar that loosely passes through the stop-block having a check-nut *b* screwed on its rear end, which nut is designed to limit the forward sliding movement of the bar 13, allowing it to only project slightly in advance of the pin 11 for support of the same in elevated adjustment, as shown in Fig. 5.

Below the car-frame and near its end a transverse rock-shaft 15 is supported to rock by any suitable means, one end that is outermost having a rotatable engagement with a

depending bracket that has a concave rack *d* formed on it. There is one end of a lever *e* secured on the outer end of the shaft 15, which lever is engaged with the rack *d*, as hereinafter explained.

At a correct distance from the draw-head 10 an arm 15^a is formed or secured on the shaft 15, and from said arm, near its free end, a pin *f* projects at a right angle thereto.

On the lower side of draw-head 10, at a proper distance from the flared throat-opening thereof, an arm 16 is pivoted by its upper end, preferably by a furcated block *g* or like means, and on the pendent lower end of said arm an apron 16^a is affixed, which inclines down and rearward from the front edge of the arm when the latter hangs vertical, as shown in Fig. 5, the apron having side flanges that project forwardly when it is disposed as stated, and is shown in Figs. 1 and 5. The furcated block *g* is secured on the draw-head by means of a pivot-bolt *g'*, which will permit a lateral movement of the arm 16 when it is in a horizontal position, as indicated in Fig. 2.

The arm 16 is longitudinally slotted between its ends at a point which will permit a loose engagement with said slot of the fulcrum-pin *f*, that projects from the arm 15^a, as before mentioned. It will therefore be apparent that a movement of the lever *e*, that is at the outer end of the shaft 15, will correspondingly rock the apron 16^a.

The lever *e* is formed of two pieces, which are rule-jointed together, as shown at *e'* in Fig. 6, and a spring e^2 is provided that is attached by an end to one part of the lever, pressing with its free end on the other section of the same, thereby holding the two sections alined, but under pressure that is abnormal, permitting the lever to flex against stress of said spring, for a purpose which will hereinafter appear.

The lever *e* is furnished with a pawl e^3, that is pivoted thereon to rock toward or from the concave rack *d*, a tripping-rod e^4 and rocking grip-piece e^5 being provided for the control of said pawl, as represented in Fig. 6. A guard-plate e^6 (shown by dotted lines in the figure mentioned) is secured on the lever *e*, so as to loosely contact with the side of the rack *d* and prevent lateral displacement of the lever.

On the car-body above the draw-head another horizontal rock-shaft 17 is loosely secured, having a right-angled arm 17^a on its inner end, and, as clearly represented in Figs. 3 and 4, the said arm is jointed at an appropriate point between its end, having a spring *h* at the joint, which is adapted to straighten the arm and hold it in such a condition until flexed by pressure. The rearward member of the jointed arm 17^a is flexibly connected with the upper end of the coupling-pin 11, and the forward portion of the other member of said arm is forked, the two limbs thus produced having hooks *h'* formed on their ends, which are turned upward, as shown in Figs. 3 and 4. The opposite or outer end of the rock-shaft 17 is journaled in a rack 18, that has a convex toothed periphery, the said rack being secured on a block *i*, that is held free to slide in a longitudinally-channeled bracket-plate 19, the latter being fastened on the end wall of the car-body.

A bracket-box *k* is secured on the end wall of the car-body for support of the horizontal rock-shaft 17 thereon, and, preferably, two spaced enlargements *m* are formed or secured on the shaft, one each side of the bracket-box, these projections being provided to limit the longitudinal movement of said shaft.

A lever 20 is secured by one end on the outer end of the rock-shaft 17 and is furnished with a pawl *n*, that is adapted to engage with the teeth of the convex rack 18, that afford detents for the retention of the lever at any point of rocking movement it is desired to hold it. There is a guard-plate *n'* secured on the lever which loosely contacts with the side of the rack 18 and serves to laterally and loosely hold the lever in contact with the said rack. The usual pawl-tripping device, comprising a rocking handle *p* and spring-pressed rod *p'*, is provided for controlling the engagement of pawl *n* with rack 18.

On the hooks *h'* a rectangular apertured link guiding and holding plate 21 is hung by chains *r* or other flexible connections, and the length of the rock-shaft 17 is proportioned to the distance of the car-coupling from the side of the car toward which said shaft is projected, so that the plate 21 may be moved endwise across the mouth of the draw-head by sliding the arched rack 18 and its supporting-block *i* longitudinally in the bracket-plate 19. The holder-plate 21 is designed to afford support to and control the projection of a link 12, that is coupled to a draw-head 10 by the pin 11, as indicated in Fig. 3, and it will be apparent that by rocking the lever 20 in an upward direction the jointed arm 17^a will be correspondingly lifted, and in turn the holder-plate 21 will be elevated. In case it is necessary to considerably raise the projecting end of a link 12 to enter it within an approaching draw-head 10 the upward rocking movement of the lever 20 will evidently effect this, and the pawl *n* will retain the lever at a desired point by its engagement with appropriate teeth of the rack 18. It will further be evident that, to laterally adjust the link 12, so that its outer end will freely enter a draw-head, it is only necessary to longitudinally slide the rock-shaft 17, which will impinge the side edge of the holder-plate on the side of the link, so as to slue the latter into a desired position. This means for laterally adjusting the link is very advantageous when cars are to be coupled while on a sharp curve of a railroad-track.

It may be essential that a car shall be detached from another car while the link 12 is encircled by the holder-plate 21. In such a

case the flexure of the jointed arm 17ª, as indicated in Fig. 4, will permit the pin 11 to be lifted and release the link, the contact of the holder-plate with the lower side of the link effecting such a flexure of the arm, which will be straightened by the spring *h* when the lever 20 is again lowered.

It will be seen that when the coupling-pin 11 is raised, as just described, the slide-bar 13, that has been held rearwardly pressed against the force of the spring 14 by the link 12, will on release of said link slide forward and project below the pin 11 for its support in elevated adjustment.

It is preferred to provide the rack *d* with a support similar to that shown in Fig. 7, and as applied for maintaining the outer end of the shaft 17 in position, the said rack being thus adapted for slidable movement on the bracket-plate 19, that in this case is secured on the lower side of the car-frame near the side of the car-body. Check shoulders or enlargements *m* are also provided on the shaft 15 to limit its longitudinal movement, as shown in Fig. 8, and a bracket-box similar with the box *k* (shown in Fig. 7) is secured on the lower side of the car-frame between the enlargements *m* to sustain the body of the shaft. The parts not shown in this construction being duplicates of those represented in Fig. 7, it is not considered necessary to illustrate them in connection with the rock-shaft 15.

The apron 16ª, that in service affords additional means for control of the coupling-link 12, is adjusted to contact with the lower side of said link when the latter is coupled by the pin 11 to a draw-head 10, as shown in Fig. 2, the elevation of the apron being effected by an inward rocking adjustment of the jointed lever *e*, which will upwardly rock the arm 16, as before explained, and the arm 16 may evidently be laterally rocked, so as to move the apron a suitable degree for a lateral adjustment of the link 12.

It will be seen that when the apron 16ª is pressed upward against the link 12—that is, forcibly pressed forward against the pin 11 by the spring 14—the link will be upwardly inclined in degree corresponding with the elevation of the apron, which is essential for the proper projection of a link on a draw-head that is lower than the draw-head that is to receive the link. Usually,. however, the holder-plate 21 is employed to hold and give direction to the link 12, while the apron 16ª is adjusted on the approached draw-head to serve as a guide for entering the free end of the link within the draw-head that is to be coupled therewith.

When two cars are forced toward each other for effecting a coupling of the same, the impinge of one coupling on the apron 16ª will depress it, and to permit such a depression without injury to working parts of the car-coupling the peculiar construction of the lever *e* becomes available. As it will be seen that a downward pressure on the apron will so rock the shaft 15 that the rule-joint of the two-part lever *e* will be flexed so as to depress said joint against stress of the spring e^2, and when there is draft strain put on the link 12, so as to pull the impinging draw-head away from the apron it has been in contact with, the spring e^2 will straighten the arm *e*, so that parts of the apron-operating mechanism will resume their normal condition.

From the foregoing description it will be seen that my improved car-coupling may be safely coupled to or detached from a similar coupling by an operator at the side of the car, and, furthermore, that cars may be readily coupled on curves of a railroad or be released on curves or a straight track with equal facility.

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

1. In a car-coupling, the combination with a hollow draw-head, a vertically-slidable coupling-pin therein, and a forwardly-spring-pressed slide-bar within the draw-head, of a coupling-link held projected by the slide-bar, and supported on an apron hung from the draw-head by an arm swivel-connected thereto, and adapted to incline and laterally adjust the projected end of the link by vertical and lateral movement of said swiveled arm, substantially as described.

2. In a car-coupling, the combination with a hollow draw-head, a vertically-slidable coupling-pin therein, and a forwardly-spring-pressed slide-bar within the draw-head, of an inclined apron hung to rock into position at the front of the draw-head, by a swivel-connected pendent arm which is longitudinally slotted, an elongated coupling-link engaging the pin, resting on the apron, and pressed forwardly by the slide-bar, and a rock-shaft controlled by a ratchet-rack and lever device, said shaft having a bent arm on its inner end engaging the slot of the pendent arm whereby the link may be inclined and also laterally adjusted to enter the throat of another draw-head, substantially as described.

3. In a car-coupling, the combination with a hollow draw-head, and a vertically-slidable coupling-pin therein near the draw-head throat, of a supported and longitudinally-slidable rock-shaft operative at its outer end from the side of the car, said shaft being controlled in its longitudinal and rocking movements by a ratchet and lever device held on the car by a fixed bracket-plate and slidable block thereon said shaft having an arm at the inner end loosely connected to the upper end of the coupling-pin, substantially as described.

4. In a car-coupling, the combination with a hollow draw-head, a vertically-slidable coupling-pin therein, an elongated coupling-link, and a spring-pressed slide-bar adapted to press the link against the depressed pin, of an inclined apron hung from the draw-head

by a slotted arm, a rock-shaft on the car-frame having an arm loosely engaging the slot of the apron-arm, and a rack and lever device at the outer end of the rock-shaft adapted to adjustably hold the apron against the link for its support or inclination, substantially as described.

5. In a car-coupling of the described construction, the device for controlling the adjustable inclined apron, comprising the slotted arm on said apron hung from the draw-head, the rock-shaft on the car-frame having an arm loosely engaged with the slot of the apron-arm, a bracketed rack on the car-frame at one side of the car, and a two-part rule-jointed lever having a spring that straightens said lever after flexure, and a pawl on the lever controlled by a tripping device and engaging the bracketed rack, substantially as specified.

6. In a car-coupling of the described construction, the combination with the draw-head, the vertical coupling-pin, and the elongated coupling-link, of the link-adjuster, comprising the apertured holder-plate, the horizontal rock-shaft loosely secured on the car above the draw-head and having a jointed spring-pressed arm that is flexibly connected with the holder-plate, a longitudinally-adjustable arched rack on the car, and a lever having a controlled pawl, which pawl is engaged with the rack for holding the shaft rocked and the plate at different points of elevation, substantially as described.

JOHN S. WILLIAMS.

Witnesses:
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JOHN HOPKINS.