(No Model.)

3 Sheets—Sheet 1.

A. W. VAN DORSTON.

CAR COUPLING.

No. 341,292. Patented May 4, 1886.

Fig. 1.

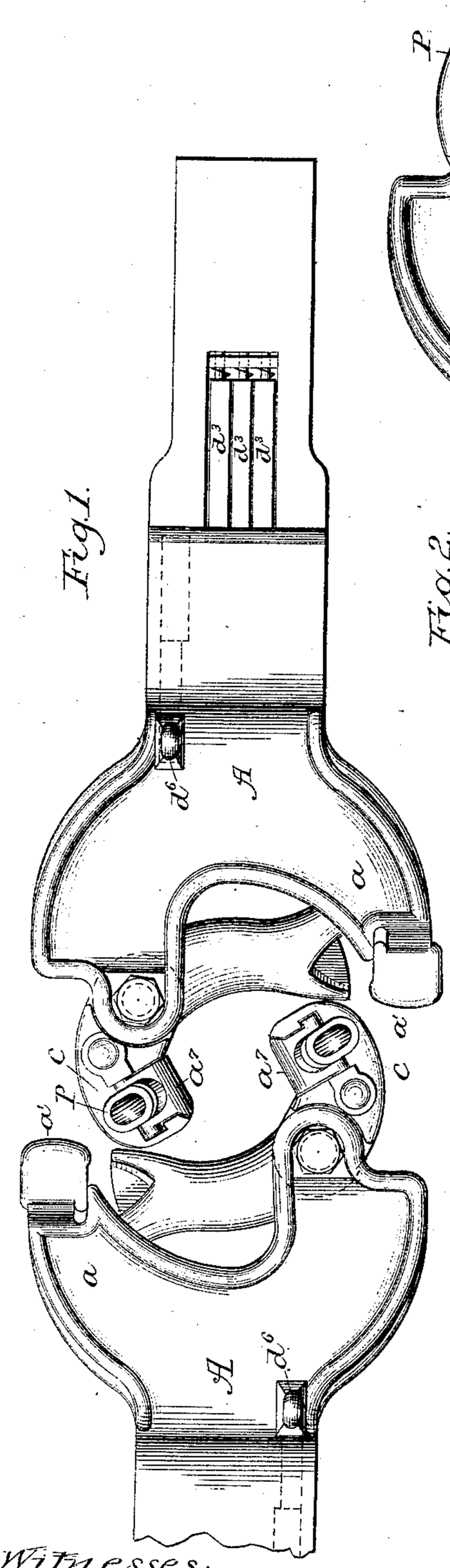

Fig. 2.

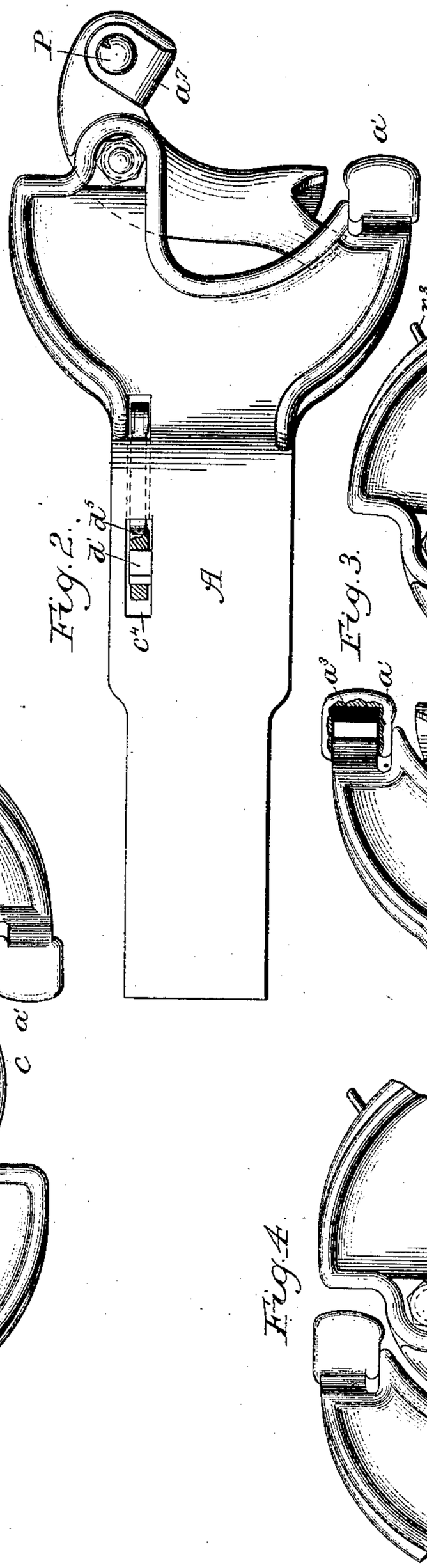

Fig. 3.

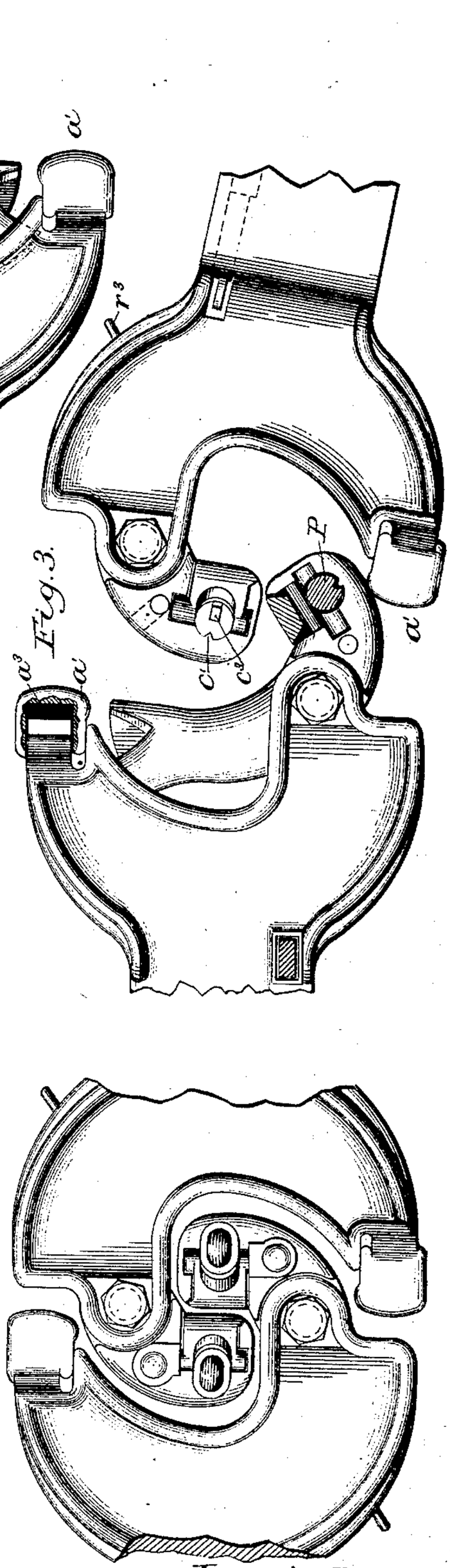

Fig. 4.

Witnesses:
Chas. Tenn Crow
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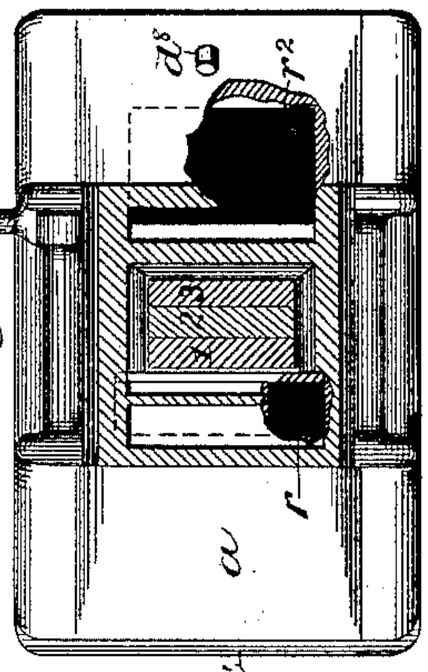
Inventor.
Alvin W. Van Dorston

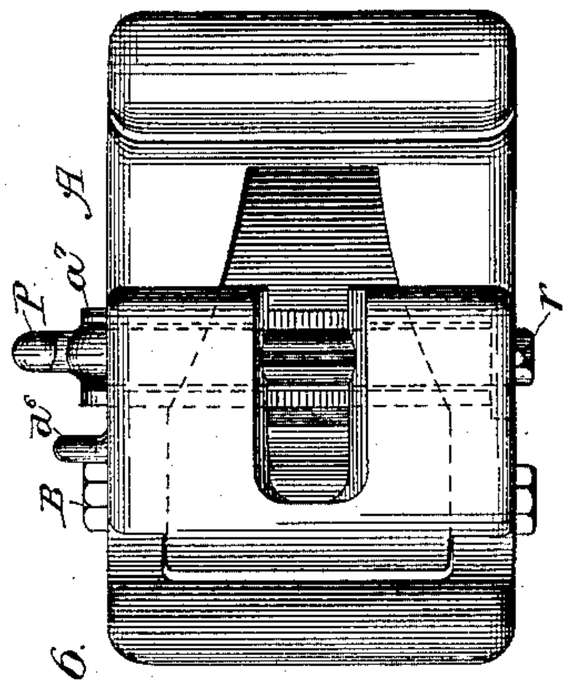
(No Model.) 3 Sheets—Sheet 2.

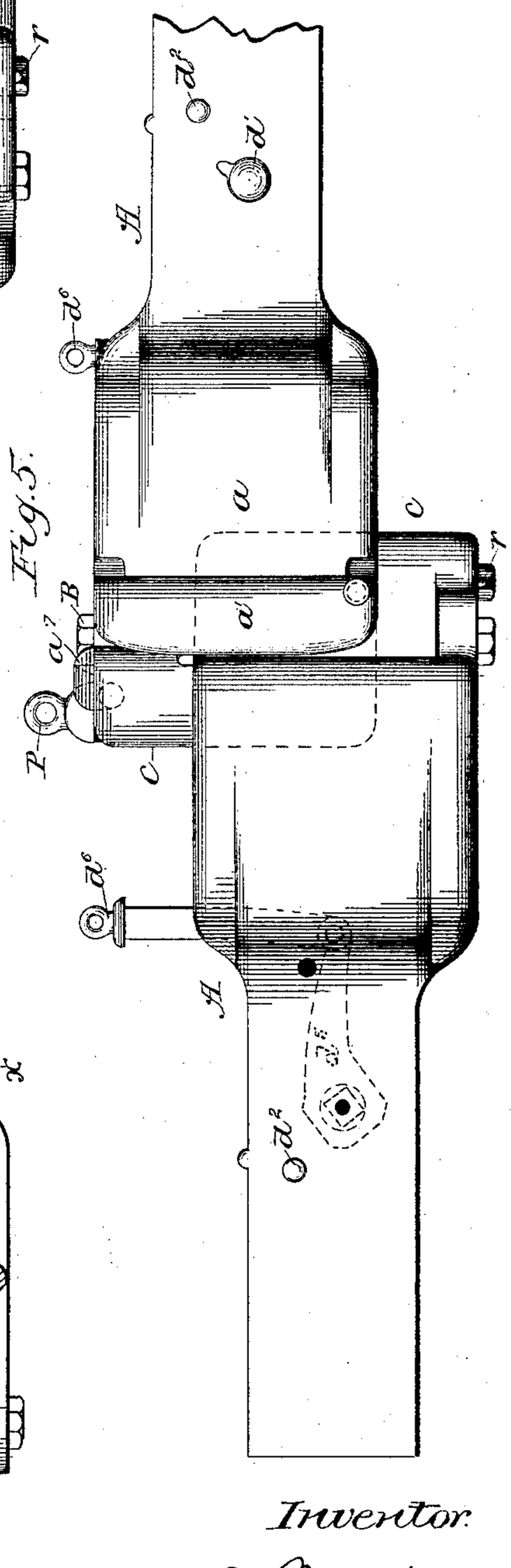
A. W. VAN DORSTON.

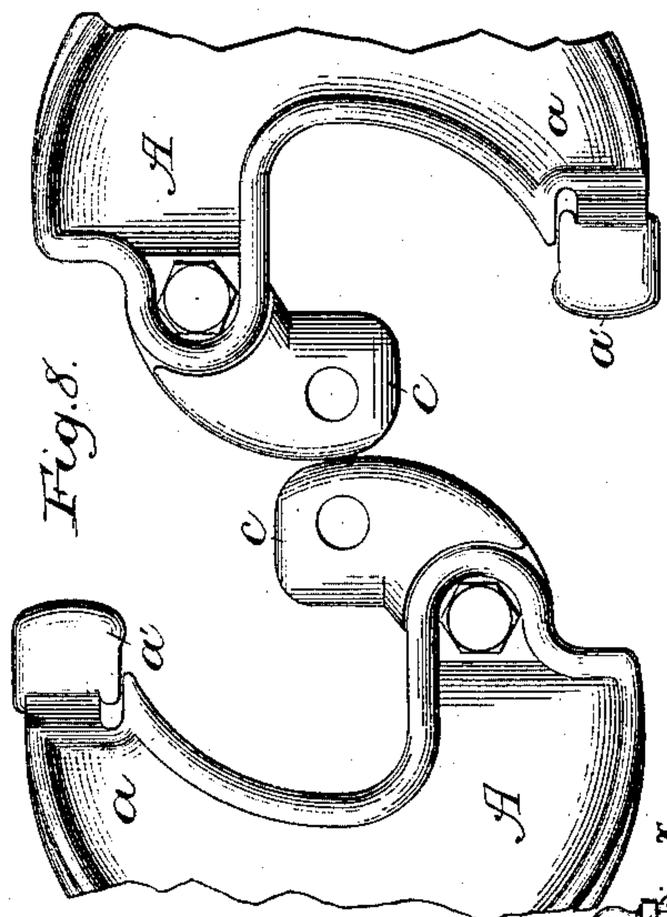
CAR COUPLING.

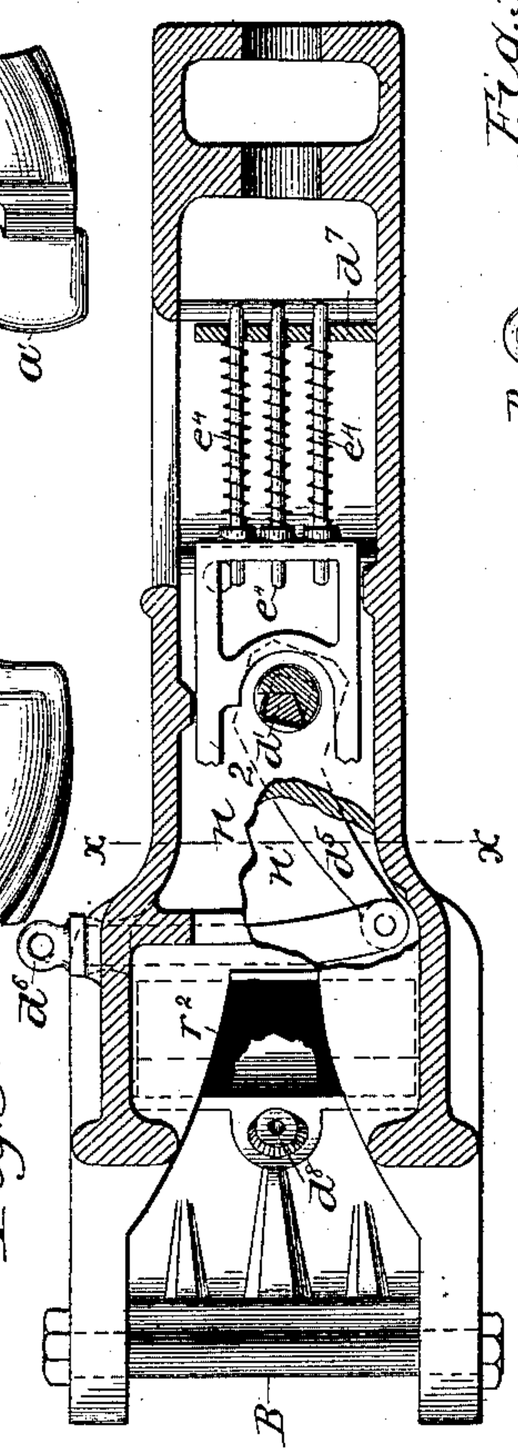
No. 341,292. Patented May 4, 1886.

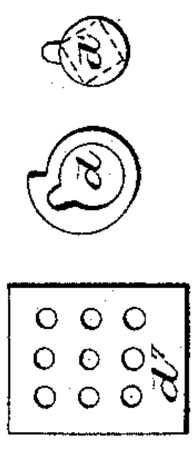












Witnesses:
W. W. Van Dorston,
Chastan Crow

Inventor:
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(No Model.)

3 Sheets—Sheet 3.

A. W. VAN DORSTON.

CAR COUPLING.

No. 341,292. Patented May 4, 1886.

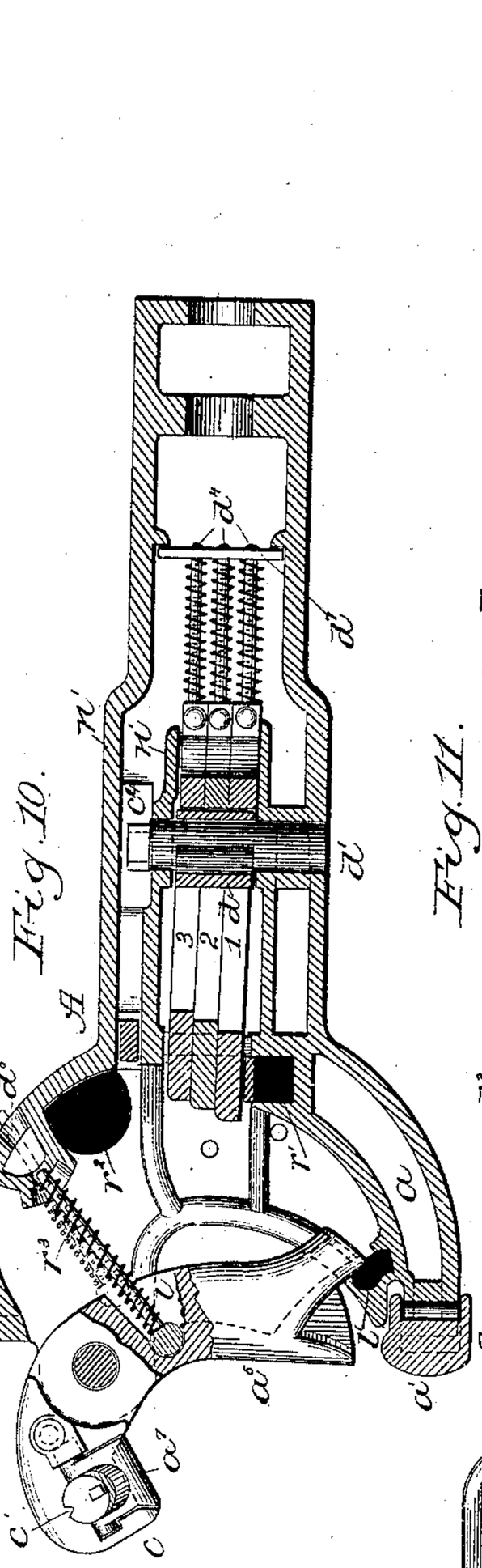

Fig. 10.

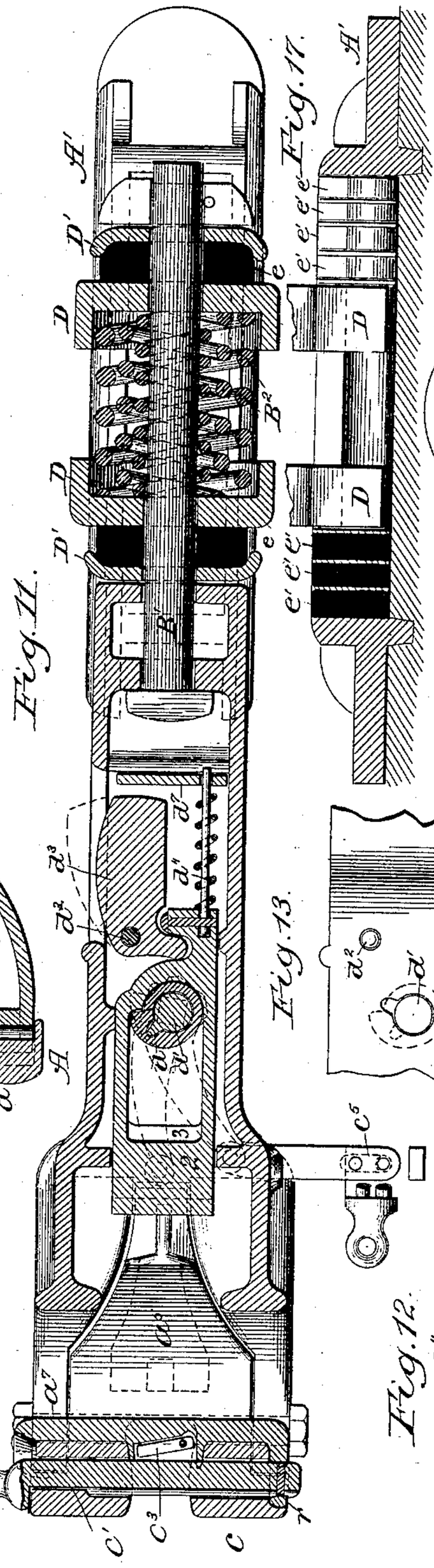

Fig. 11.

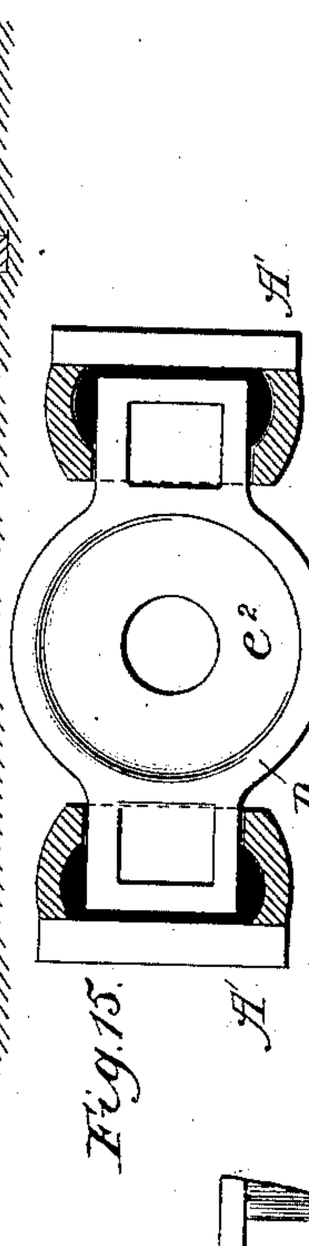

Fig. 17.

Fig. 15.

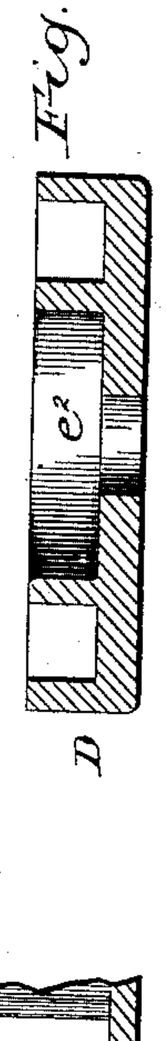

Fig. 16.

Fig. 13.

Fig. 14.

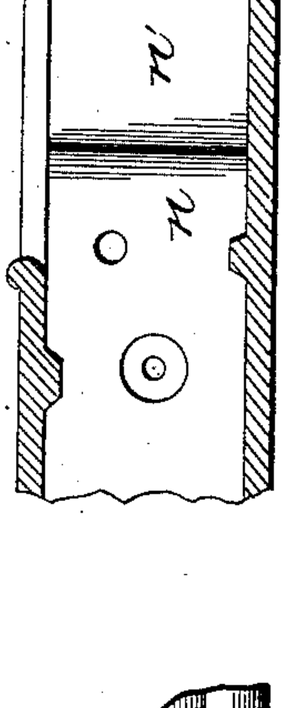

Fig. 12.

Witnesses:
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A. W. VanDorston

Inventor.
Alvin W. VanDorston

UNITED STATES PATENT OFFICE.

ALVIN W. VAN DORSTON, OF PORTLAND, OREGON.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 341,292, dated May 4, 1886.

Application filed December 12, 1885. Serial No. 185,504. (No model.)

To all whom it may concern:

Be it known that I, ALVIN W. VAN DORSTON, a citizen of the United States, residing at Portland, in the county of Multnomah and State of Oregon, have invented certain new and useful Improvements in Automatic Self-Adjusting and Cushioned Car-Couplers; and I do declare the following to be a clear, full, 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My present invention relates to improvements in that class of car-couplers in which the coupling is effected by the lateral movement of vertical pivoted arms and interlocking jaws, the ends of said arms automatically engaging and interlocking with a series of independent longitudinal reciprocating locking-bars arranged within a suitable recess in the draw-bar proper, in which either of the locking-bars securely retain said arm and jaw in a coupled position until the same are released by a combination of uncoupling mechanism operating said locking-bars simultaneously rearward, the object of my improvements being to provide an improved construction of the interlocking bars and uncoupling mechanism, the jaw with hinged face-plate and coupling-pin, the guard-arm, and buffer-cap having india-rubber cushions, as previously set forth in Letters Patent No. 328,547, granted to me under date of October 20, 1885.

My improvements further consist in other novelties in the construction and general arrangements of parts, all as will be hereinafter fully described, and pointed out in the claims.

In the accompanying drawings, Figure 1 represents a top plan view of a pair of my improved car-couplers as they appear in the act of coupling, with both jaws in an open position when coming together; Fig. 2, a bottom plan view of the draw bar and head, showing the location of the vertical and longitudinal recess in the right-hand side of the draw bar and head extending from the bottom through to the top side of said draw-head, in which the uncoupling-levers operate, also showing how the jaw-face is secured at the lower end by means of the coupling-pin; Fig. 3, a view of a pair of the draw-heads, partly shown in section, and as they appear in the act of coupling on a lateral curve, with one jaw in a closed and locked position and one jaw open, the right-hand one showing the jaw-pin removed, the left-hand one showing a sectional view of the jaw face and pin, and which also shows the upper part of the buffer-cap of the guard-arm broken away, showing the india-rubber cushion arranged therein, Fig. 4 representing a pair of my improved draw-heads when in operation; Fig. 5, a side elevation representing a pair of said draw-heads as they appear when operating together on high and low cars, the left-hand one showing the uncoupling-lever in the position releasing the interlocking jaw and arm, and in which position the said lever is retained to prevent the jaw and arm from locking in a coupled position, the right-hand one showing the uncoupling-lever in the position allowing the locking-bars to interlock with the arm of the jaw when the same is closed; Fig. 6, a front elevation of the draw-head with the jaw closed; Fig. 7, a rear view, partly in section, showing the location of the india-rubber cushions to the jaw-arm and locking-bar as they appear broken off at the line *x* of Fig. 9; Fig. 8, a top plan view of the draw-heads as they appear when provided with a plain jaw not having the hinged jaw-face, and which also shows the position abutting against each other should the jaws be in a closed position when coming together. Fig. 9 is a vertical longitudinal sectional view showing the interior with a portion of the inner wall between the uncoupling-lever and the interlocking bar broken away, showing the position of said levers when the locking-bars are free to interlock with the jaw-arm by means of a series of springs operating said bars independently of each other; Fig. 10, a longitudinal sectional view representing the interior and inner mechanism and india-rubber cushions arranged therein, and the manner of providing the interlocking jaw-arm with the reciprocating rod, with sprial spring for the purpose of adjusting the jaw and arm in the position shown; Fig. 11, a vertical longitudinal sectional view of the draw-bar, representing my improved form of the interlocking mechanism and the uncoupling-lever op-

erated from the bottom of the draw-head, also showing a sectional view of my improved cushioned draw-bar, draw-plates, and car attachments; Fig. 12, a section and side elevation with a detached view of my improved cushioned buffer-cap and guard-arm; Fig. 13, a section and side elevation of the draw-bar, showing the opening for the reception of the rock-shaft imparting motion to the uncoupling-dog; Fig. 14, a vertical sectional view of the same, showing the opening in the opposite side through the inner wall, for the reception of that part of the rock-shaft having the square end; Fig. 15, a cross-section of the car-brackets and an inner face view of my improved draw-plates as they appear operating within the car-brackets and against the india-rubber cushion arranged therein; Fig. 16, a detached sectional view of said draw-plates; Fig. 17, a longitudinal sectional view showing a section of the draw-plates and a series of india-rubber cushions arranged therein; Fig. 18, detached views of the uncoupling-dog, the rock-shaft operating said dog, also a rear end view of one of the interlocking bars and face elevation of the removable plate through which the spring-supports reciprocate, and against which said springs operate to force the interlocking bars forward.

Referring to the drawings forming a part of this specification, similar letters and figures of reference marked thereon indicate like parts.

A represents the draw bar and head, preferably constructed of malleable iron, provided with steel jaw. In the right-hand side of the draw bar and head is provided a recess, c^4, between the inner and outer walls, n n', (shown in Figs. 2, 9, and 10,) extending through and from the bottom upward and through the top of said draw-head, for the reception of the uncoupling-levers d^5 d^6, the lever d^6 operating the rock-shaft by means of said lever being secured on the square end of the rock-shaft d'. Said shaft is also provided with a suitable rib, by means of which the uncoupling-dog d moves the interlocking bars Nos. 1, 2, and 3 simultaneously rearward, releasing the arm a^5 of the interlocking jaw c when the lever d^5 is operated from either side or top of the cars by means of suitable connections thereto.

In the operation of my improved construction of the draw-bar and mechanism it will be seen that the interlocking bars Nos. 1, 2, and 3 are provided with the uncoupling-dog d and rock-shaft d', which is located within a suitable opening through the draw-bar and the interlocking bars, for the purpose previously described, and that the said bars are operated by means of separate and independent gravity-bars d^3, pivoted by means of the rivet d^2, operating in combination with the rods and springs d^4, acting independently and for the same purpose. It will be seen by this construction that the arm a^5 of the jaw c may be securely locked with the interlocking-bars by means of gravity and springs combined, or by means of the gravity-bars alone by removing the springs d^4, but preferably provided with a series of reciprocating rods, with the springs e^4 e^4 e^4 operating independently with each interlocking bar Nos. 1, 2, and 3, as shown in Fig. 9, which imparts a quicker motion to said bars than obtained by the mechanism set forth in Letters Patent previously referred to, when effecting a connection under a rapid movement and sudden concussion of the draw-heads and cars.

In the construction of the jaw c the arm a^5 is provided with the recess l, in which the inner end of the reciprocating rod is removably secured without being pivoted by means of a rivet, as in Letters Patent above mentioned, which is provided with the spiral spring r^3, and which rod operates through the recess d^8 and against the jaw-arm in a suitable recess, serving to move the jaw in an open position by means of said spring, as shown in Fig. 10, obviating the necessity of going between the cars to perform such office when the arm a^5 has been released from either or all of the locking-bars Nos. 1, 2, and 3, as fully set forth in Letters Patent No. 328,547, granted to me under date of October 20, 1885. It will be further observed that should the draw-heads A come together with both jaws c closed, as shown in Fig. 8, it would prevent their coupling; but in such position the weight and momentum of the draw-heads are arrested by means of the arm a^5 of the jaw c being in contact with the india-rubber cushion r^2, located in the right-hand side of the draw-head A, as shown in Figs. 7, 9, and 10, and which cushion performs the same function should the jaw c be in a closed and locked position when coming in contact with other classes of draw-heads; or, should the jaw c be in an open position, as shown in Fig. 10, when coming in contact with other systems of draw-heads, the force or momentum of the heads is taken up by means of the india-rubber stop or rest l', located in the arm a of the draw-head A.

In taking up the slack motion of the draw-heads and cars the momentum on the part of the draw-heads is taken up by means of the india-rubber cushion r', located in the left-hand side of said draw-bar heads, against which the interlocking bar No. 1 operates. Thus it will be readily seen that the danger of breaking or damaging the draw bars and heads from the severe concussions to which they are subjected in the longitudinal motion of the cars and on effecting connections is greatly reduced throughout. The arm a is also provided with a removable buffer-cap, a', and india-rubber cushions a^2 a^2, in which construction the buffer-cap a' is secured on the arm a by means of the rivet a^3 through the lower end of said cap a' and the inward-projecting boss at the upper end of said cap, both of which retain said cap by means of the up-

per and lower projecting boss of the arm *a*, as shown in Figs. 5, 10, and 12. By this construction it will be seen that the buffer-cap *a'* serves as an elastic buffer to the rigid arm *a*, taking up the momentum of the draw-heads, and that a less number of parts is required to obtain the same result and a more substantial device, as in Letters Patent previously referred to, and in case of accident the cap *a'* is more easily replaced.

In the construction of the jaw *c* the removable hinged face a^7 is secured by means of two forward-projecting lugs provided with lateral bosses, which operate in corresponding recesses, as shown in Fig. 3, in the opposite sides and upper end of the vertical opening of the jaw *c*, as fully set forth in Letters Patent already mentioned. The hinged face-plate a^7 also provides a full and continuous wearing-surface to the jaw *c*, and the pin P, which secures the lower end of said face-plate, is provided with the rivet *r*, which serves as a stop in the V-shaped groove in the front side of said pin when coming in contact with the lower end of the rib *c'* in the upper vertical opening of the jaw *c*, as shown in Figs. 3 and 11, which prevents the coupling-pin P from being entirely withdrawn and subject to loss.

In the rear end of the draw-bar A is secured a draw-bolt, B', and on which the draw-plates D D are loosely fitted, having the recess e^2, for the reception of the car-buffer and draw-springs B^2 of usual form, and which recess is of sufficient depth to prevent said springs from hammering before the draw-plates D D are brought together by the longitudinal motion of the cars. By this construction of the draw-plates it will be seen that they have a bearing the full length of their inner face when they have met, while the draw-plates in my former Letters Patent depended on an annular flange to perform the same function. Said draw-plates are also provided with india-rubber cushions *e e*, operating between said draw-plates and the washers D' D', which relieve the sudden concussion when the draw-plates D D have met.

Referring to Figs. 17 and 15, it will be seen that the car-brackets A' are concaved in the upper and lower sides of the recess, by which means the series of india-rubber cushions are retained, against which the ends of the draw-plates D D abut, and that the rigid blows caused by the forward and backward motion of the cars on the part of the car-brackets are greatly diminished, as fully set forth in Letters Patent No. 328,547, granted to me under date of October 20, 1885.

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

1. In an automatic and self-adjusting car-coupling, the combination, with a pivoted jaw and arm, of a series of longitudinal reciprocating interlocking bars, constructed as shown, whereby said jaw and arm will be securely locked by either of said bars in a coupled position, substantially as and for the purpose set forth.

2. In an automatic car-coupling, the combination, with a pivoted arm and jaw, of a series of independently longitudinal reciprocating locking-bars operated by means of a series of pivoted gravity-levers and springs combined, whereby said pivoted arm and jaw will engage with one or more of said bars to retain said jaw and arm in a closed and locked position, substantially as and for the purpose set forth.

3. In an automatic car-coupler, the combination, with pivoted jaw and arm and a series of independently longitudinal reciprocating interlocking bars, of means, substantially as described, for simultaneously operating said bars to release the said arm and jaw, substantially as and for the purpose set forth.

4. In an automatic car-coupling, the combination, with a pivoted jaw and arm, of a series of independently longitudinal reciprocating lock-bars and a series of reciprocating rods provided with springs e^4 e^4 e^4 and plate-rest d^7, substantially as and for the purpose set forth.

5. In an automatic car-coupler, the combination, with the draw-head A, of the arm *a*, constructed as shown, and the buffer-cap *a'*, having india-rubber cushions a^2, and removably secured by means of the rivet a^3, substantially as and for the purpose set forth.

6. In an automatic car-coupling, the combination, with the draw-head A and longitudinal reciprocating lock-bars Nos. 1, 2, and 3, of the pivoted arm a^5 and jaw *c*, provided with the reciprocating rod, detachably secured, and having spiral springs r^3, whereby said jaw *c* and arm a^5 will be moved outward in an open position when the arm a^5 is released from the interlocking bars, substantially as shown, and for the purpose set forth.

7. In a car-coupling, the combination, with the longitudinal reciprocating locking-bars, of the dog *d*, the rock-shaft *d'*, and levers d^5 and d^6, for simultaneously moving said bars rearward, releasing the arm a^5 of the jaw *c*, as set forth and described.

8. In a car-coupling, the jaw *c*, having the vertical opening provided with the rib *c'*, in combination with the grooved coupling-pin P, the rivet *r*, the hinged face-plate a^7, removably secured, substantially as and for the purpose set forth.

9. In a car-coupling, the draw-bolt B', provided with the draw-plates D D, having the recesses e^2, in combination with the springs B^2 and india-rubber cushions *e e*, substantially as and for the purpose set forth.

ALVIN W. VAN DORSTON.

Witnesses:
CLARA CROW,
CHASTEEN CROW.