

No. 635,115.

Patented Oct. 17, 1899.

C. D. WHITING.
CAR COUPLING.

(Application filed Jan. 21, 1898.)

(No Model.)

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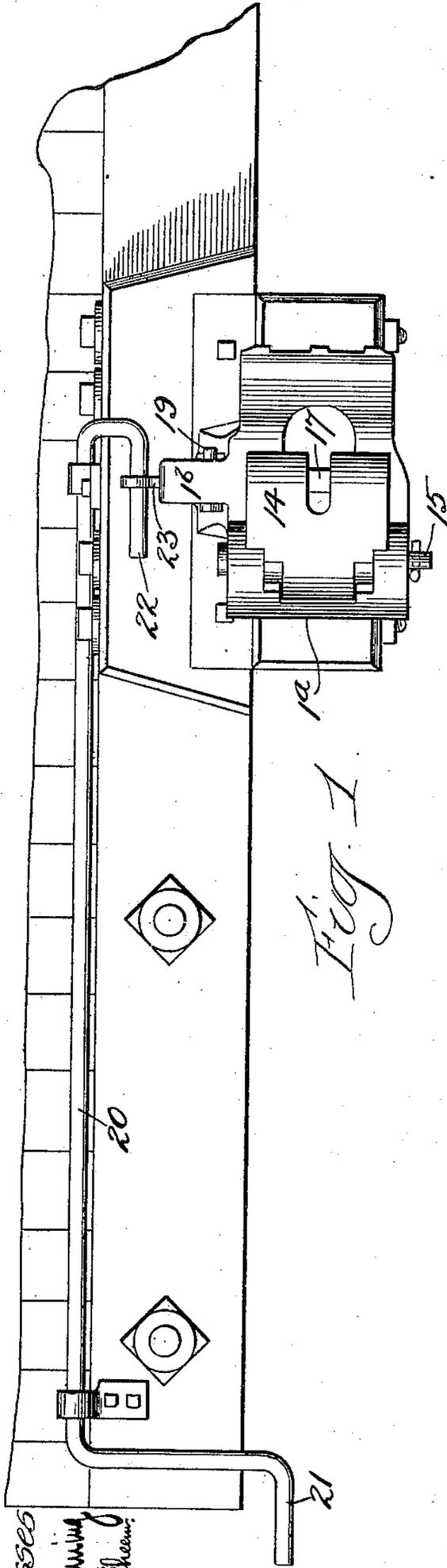


Fig. 1

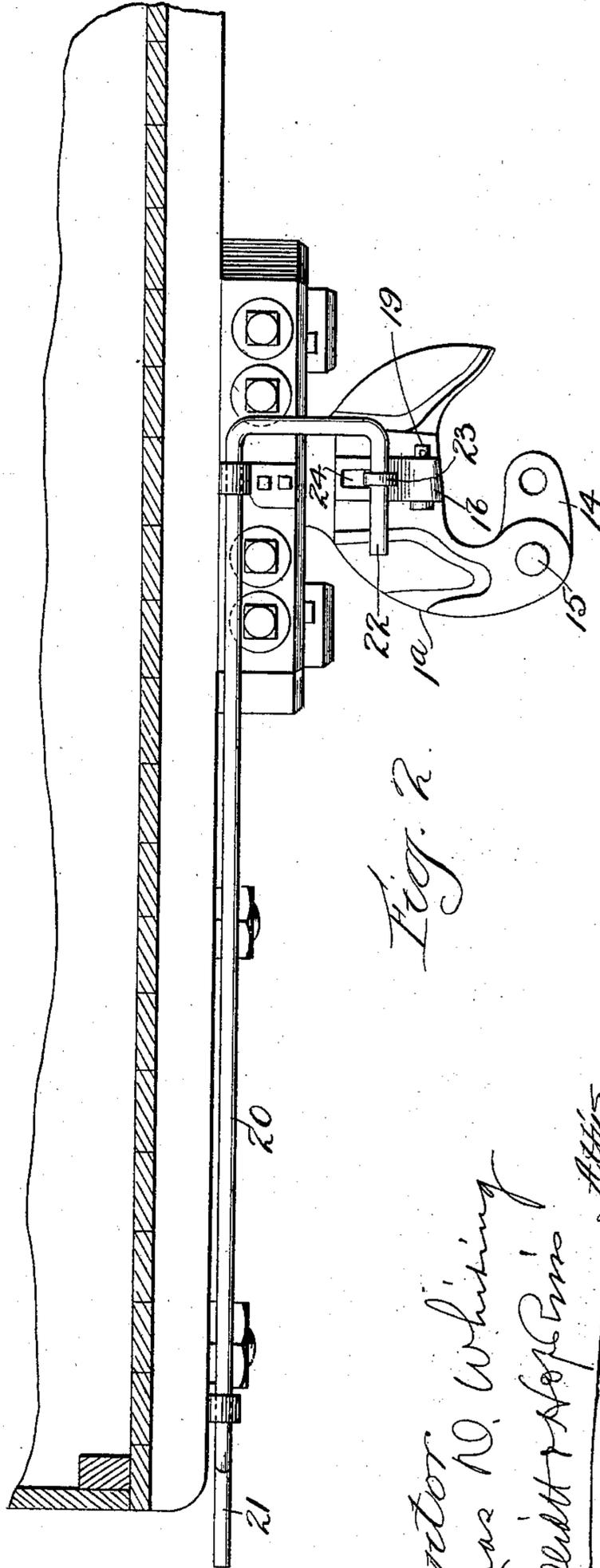


Fig. 2

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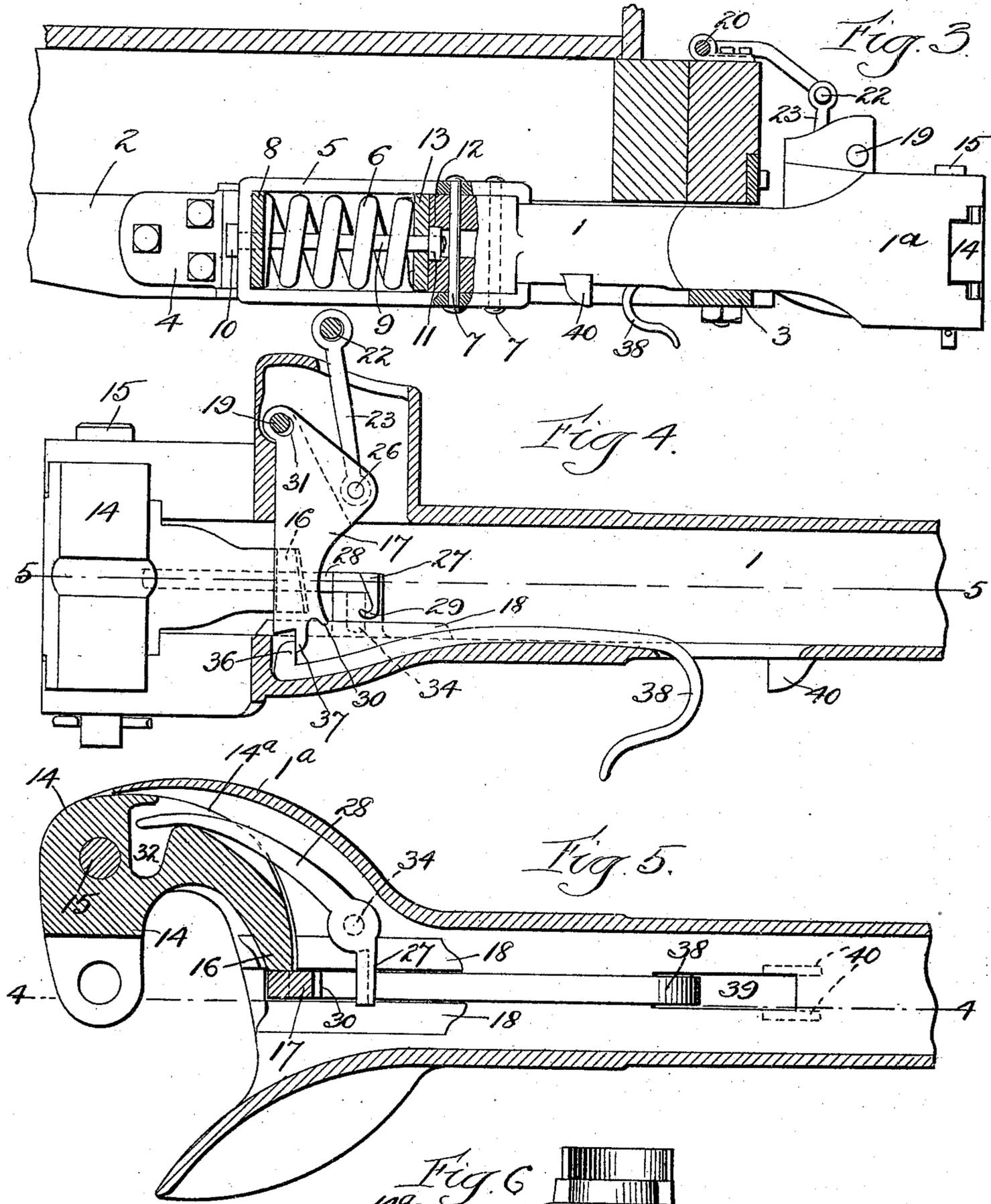
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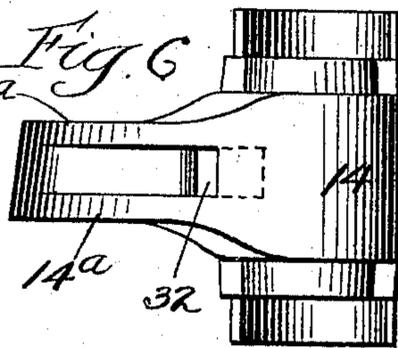
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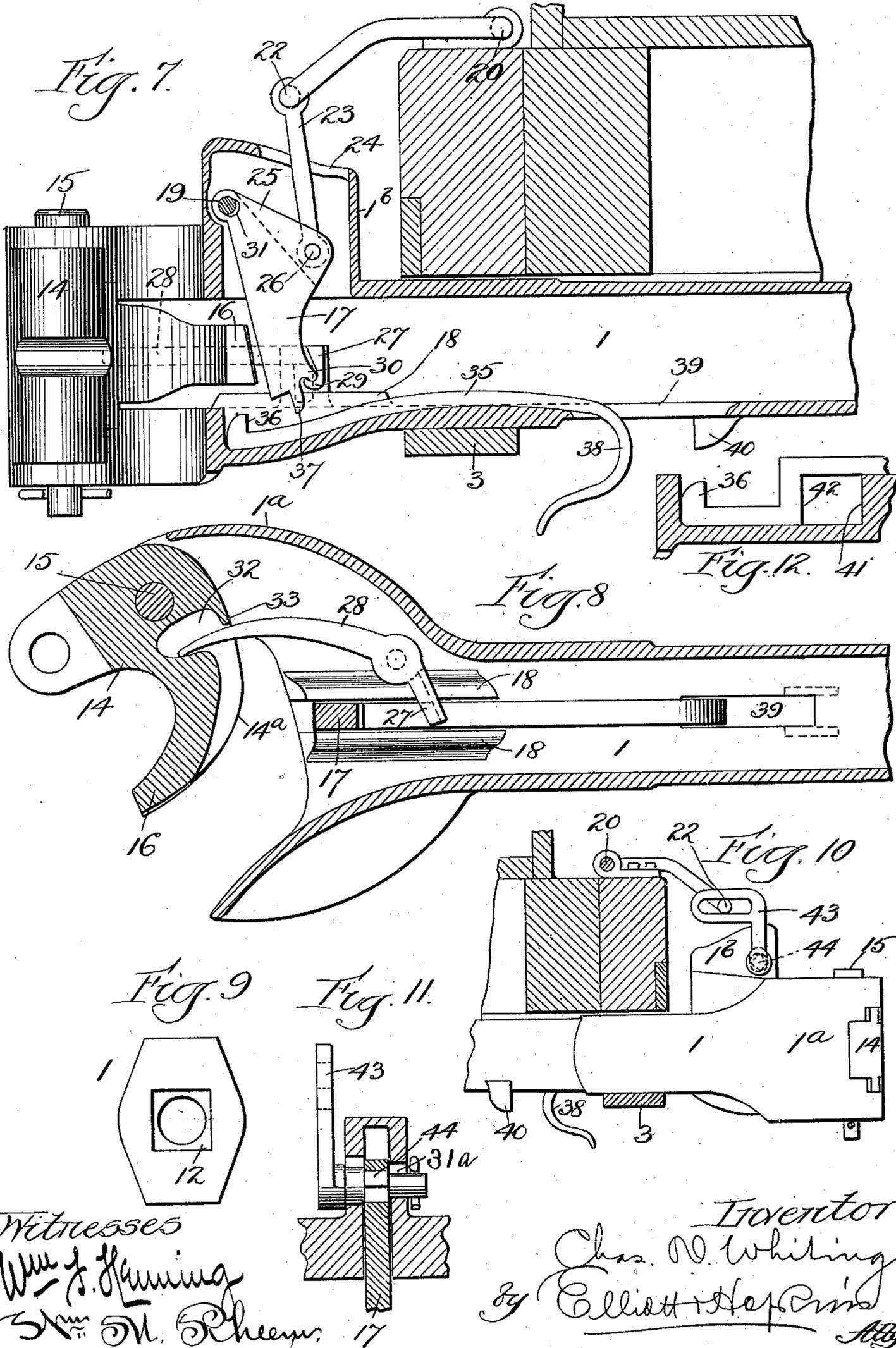
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3 Sheets—Sheet 3.



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UNITED STATES PATENT OFFICE.

CHARLES D. WHITING, OF CHICAGO, ILLINOIS.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 635,115, dated October 17, 1899.

Application filed January 21, 1898. Serial No. 667,387. (No model.)

To all whom it may concern:

Be it known that I, CHARLES D. WHITING, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Car-Couplers, of which the following is a full, clear, and exact specification.

My invention relates more particularly to the Janney type of coupler or to that form in which pivoted interlocking knuckles or jaws are employed, and the improvements have especial reference to the means for locking and releasing the jaws or knuckles and for throwing the same open or setting them in their respective positions should they through any cause be again pushed inward after uncoupling.

The improvements also relate to means for automatically uncoupling the cars should there occur any accident resulting in the detachment of either draw-bar from its car, whereby the detached or loosened draw-bar will be prevented from falling upon the road-bed and derailing the train.

The improvements also relate to means for facilitating removal of the buffer-spring when broken or its removal desired for any other cause without detaching the strap or straps which inclose the same from the draw-bar.

One of the important objects of my invention is to release the stop which locks or holds the coupling-jaw and to retain the same thus released until the couplers pull apart or open and thereafter cause it to resume its normal position in readiness to automatically lock the jaw when the couplers collide in the act of uncoupling the cars.

Another object of my invention is to provide means for automatically releasing the jaw-lock and throwing open the jaw so as to be in a receptive position for coupling and at the same time setting the jaw lock or stop in position to again lock the jaw when the couplers collide in the act of coupling the cars.

Another object of my invention is to provide means for automatically uncoupling the cars should either draw-bar become detached to an extent permitting it to pull out beyond a certain point, whereby the detached or insecure draw-bar will be prevented from entirely losing its support by its car, and hence

its inner end prevented from dropping down upon the road-bed and derailing the train.

A still further object of my invention is to provide improved means whereby the bolt which passes through the buffer-spring may be removed without detaching the buffer-spring strap from the rear end of the draw-bar, thus enabling the spring to be removed when the draw-bar is dropped down at its rear end from between the draft beams or timbers.

With these ends in view my invention consists in certain features of novelty in the construction, combination, and arrangement of parts by which the said objects and certain other objects hereinafter appearing are attained, all as fully described with reference to the accompanying drawings, and more particularly pointed out in the claims.

In the said drawings, Figure 1 is a front or end view of my improved coupler, showing the same in position on the end of the car. Fig. 2 is a plan view thereof. Fig. 3 is a side view showing the end of the car and the rear end of the draw-bar in vertical section. Fig. 4 is an enlarged vertical sectional view taken on the line 4 4, Fig. 5. Fig. 5 is a plan section taken on the line 5 5, Fig. 4, the coupling-jaw in both Figs. 4 and 5 being shown in its locked position. Fig. 6 is a detail rear elevation of the coupling-jaw. Fig. 7 is a vertical sectional view taken longitudinally of the draw-bar, showing the stop for locking the coupling-jaw in its disengaged position. Fig. 8 is a plan section showing the jaw thrown open in its receptive position in readiness for coupling. Fig. 9 is a rear end elevation of the draw-bar. Fig. 10 is a side elevation on a smaller scale, showing a modified form of the means for disengaging the jaw-locking stop. Fig. 11 is a detail vertical transverse section thereof hereinafter explained, and Fig. 12 is a detail vertical sectional view illustrating a modified form of emergency releasing device hereinafter explained.

1 represents a hollow draw-bar located between the usual draft-timbers 2 and being loosely supported at its forward end by the iron 3, projecting thereunder, and at its rear end by the usual brackets 4, one of which is secured to each of the draft-beams in the ordinary manner, one only being shown in the

drawings. The rear end of the draw-bar 1 is provided with the usual buffer-spring strap 5, secured thereto and projecting over and under the spring 6 in the usual way, this strap 5 being ordinarily secured to the rear end of the draw-bar by rivets 7, having their ends permanently upset.

8 represents the rear abutment-plate for the buffer-spring 6, and 9 is the bolt which passes through the rear end of the strap 5, the plate 8, and longitudinally through the spring 6. Ordinarily this bolt has its head embedded in the rear end of the draw-bar 1; but according to my invention I turn the bolt end for end and bring its head 10 against the rear end of the strap 5, and in the rear end of the draw-bar I embed loosely a nut 11, the rear end of the draw-bar being shaped, as in Fig. 9, with a square recess 12 for the reception of the nut 11, so that the bolt 9 may be passed loosely through the strap 5 and the abutment-plate 8 and screwed into the nut 11 from the rear end, and hence should it be required to remove the spring 6 when broken or for any other cause it would only be necessary to drop the rear end of the draw-bar down below the draft-timbers, so as to expose the spring through the sides of the strap 5, whereupon the bolt 9 might be taken out and the spring moved.

13 is a bearing-plate interposed between the forward end of the spring and the nut 11 and through which the bolt 9 also passes, as will be understood.

At the outer end of the draw-bar in its usual enlarged head 1^a is a coupling jaw or knuckle 14, which may be secured therein on a pivot 15 or held in place in any suitable manner, so as to be capable of going through the coupling and uncoupling movements. This coupling jaw or knuckle is preferably arranged to swing in a horizontal plane, and its inner end is provided with a projection 16, so arranged that when it is in its closed position a locking-stop 17 may be dropped down contiguous to its end and across its line of movement, and thus prevent the jaw from being again turned outwardly until the stop is forced to the rear. This stop 17 is arranged to swing in a vertical plane longitudinally of the draw-bar, its lower end being retained against the pressure of the projection 16 and guided in its movements by substantial ribs or flanges 18, formed in the lower side of the draw-bar, while its upper end is supported by a transverse pivot or pin 19, projecting through a part of the draw-bar head, which may be in the form of an enlarged housing 1^b to accommodate the stop in its swinging movements. The stop 17 may be swung back and forth to engage and disengage the projection 16, as described, by any suitable mechanism, but preferably by some such device as that more clearly shown in Figs. 1, 2, and 7 of the drawings, which will enable the brakeman or other attendant to couple or uncouple the cars or to set the parts

in the desired position without going between the cars. This device consists of a rod 20, journaled upon the end of the car and having an operating-crank 21 at its outer end and another crank 22 at its inner end connected to the stop 17 by a downwardly-extending link 23, the link passing through an elongated slot 24 in the top of the housing 1^b and entering a channel or slot 25 (shown by dotted lines) in the top of the stop 17, the lower end of the link 23 being connected to the stop by a pivot-pin 26. The crank 22 at the inner end of the rod 20 is elongated horizontally in order to permit the draw-bar to oscillate from side to side without interfering with the connections. In order that the upward pull of the link 23 may impart the desired rearward swing to the stop 17, the pivot-pin 26 is carried considerably to the rear of the pivot-pin 19, which supports the stop, and the enlargement of the rear side of the stop thus created is also utilized as a counterbalance for holding the stop in its forward or engaging position and adding to the downward pressure afforded by the weight of the link 23 and cranks 21 and 22 in preventing the stop from accidentally jolting away from the projection 16.

In order that the members of the coupler may be put in position to enable the coupling-jaws to readily pull apart or open at the desired time without requiring the brakeman or attendant to hold the stop 17 out of engagement until that time and in order that the members may again resume a position which will enable the jaws to automatically couple when the cars collide, I provide means for holding the stop temporarily disengaged and releasing the stop 17 and permitting it to drop back to its engaging position as soon as the coupling-jaw opens, so that the brakeman or other attendant need do nothing more than throw the stop back to its released position when the train begins to back up in the act of making a flying switch or at any other time when it may be desired to separate the cars. To this end I employ a detent for engaging and holding the stop 17 when it is swung backwardly by turning the crank 21, and this detent is also arranged in operative relation to the coupling-jaw or otherwise caused to work substantially in unison therewith, so that when the jaw opens the detent will be caused to release the stop and permit the latter to fly back to its normal position in readiness to be again engaged by the projection 16 of the coupling-jaw when the latter is forced inward in the act of coupling the cars together. This detent consists of a pivoted arm or lever whose rear end 27 is provided with any suitable means for engagement with the stop 17, while its forward end 28 is so related to the coupling-jaw that when the coupling-jaw opens in the act of disengaging with the companion jaw on the other car the end 27 of the detent will be deflected rearwardly and carried out of engagement with the stop

17, which thereupon drops to its normal position and hangs across the path or line of movement of the projection 16, whose rear side being beveled or rounded readily brushes the stop to one side as the coupling-jaw moves inwardly, and when the projection 16 has passed the stop the latter drops back to its engaging position.

In order that the stop 17 may readily lodge upon the detent 27, the latter is provided with a rounded notch 29 and the stop with a tooth 30. Before the stop 17 is thrown rearwardly by the movement of the handle or crank 21 the parts are in the position illustrated more clearly in Fig. 4, and while in this position it will be seen that the arc described by the lower edge of the tooth 30 falls below the upper edge of the notch 29; but when the stop 17 is deflected rearwardly by means of power applied through the link 23 it will be seen that the link also imparts a lifting movement to the stop by reason of its upward pull thereon, and hence lifts the tooth 30 into engagement with the tooth 29, the upper end of the stop 17 being slotted at its pivotal point, as shown at 31, to permit of this upward bodily movement. This not only insures the engagement of the tooth 30 with the notch 29 when the stop is deflected by the described agencies, but it insures against the accidental engagement of the tooth 30 with the notch 29 in the event the cars should collide with sufficient force to throw the stop 17 to the rear against the detent. Inasmuch as the rear end 27 of the detent and the stop 17 move in diverging lines the rearward movement of the end 27 of the detent effected by the opening movement of the jaw will eventually pass out of engagement with the tooth 30 and permit the stop 17 to fall back to its normal position, as shown in Figs. 4 and 8. The forward end 28 of the detent is also so related to the coupling-jaw that the detent may be utilized through the intermediary of the stop 17 and crank 21 for opening the jaw or placing it in its receptive position should it be accidentally closed after the cars are uncoupled. To the end that the jaw and detent may be thus related and capable of operating each other, I provide the rear side of the jaw with a recess 32, in which the end 28 of the detent enters, such recess being of sufficient size to permit of free movement without permitting the end 28 of the detent to move beyond the reach of the salient edge 33 of the recess when the parts are in the position shown in Fig. 5. Thus it will be seen that should the parts be in the position illustrated in Figs. 4 and 5 and it should be desired to throw the coupling-jaw open, so as to receive the companion jaw on the approaching car, the same may be accomplished by pulling upwardly on the crank-handle 21 and throwing the stop 17 rearwardly against the end 27 of the detent, whose forward end 28 is thereby forced against the coupling-jaw, and since it has a bearing thereon at a point eccentric of

its pivot 15 the jaw will be thrown outwardly. When the handle 21 is released, its weight will cause it to gravitate to its normal position, and the end 27 of the detent having passed out of the reach of the tooth 30 on the stop 17, the latter will gravitate with the handle 21 to its normal engaging position in readiness to lock the projection 16 when the couplers collide.

The detent 27 28 is provided on its under side with a stud 34, (shown in dotted lines,) which rests in a plain socket in the head 1^a, and it is held in place in this socket by flanges 14^a, formed on the rear side of the coupling-jaw and receiving the end 28 between them. This simple construction enables me to readily assemble the parts, it simply being necessary to first insert the detent 27 28 and then put the coupling-jaw in place.

Draw-bars have been known to pull loose from their attachments to the car, and when this occurs while the couplings are in engagement the inner end of the detached bar is liable to drop down upon the road-bed, and in thus striking the latter while its upper end is still coupled to the following car usually results in derailing or ditching the train. In order, therefore, that the couplings may separate the instant the moorings or attachments of the draw-bar give way sufficiently to permit the draw-bar to pull out beyond a certain point, I provide the coupler with an emergency release, which preferably consists of a bar or rod 35, resting between the guideways or flanges 18 at the bottom of the draw-bar and having an upwardly-projecting hook 36, arranged normally in front of and adapted to engage with a depending projection 37 on the bottom of the stop 17. The rear end of this bar 35 is turned downwardly in the form of a hook 38 through a slot 39 in the bottom of the draw-bar and so disposed that such hook will engage with some fixed part of the structure should the draw-bar pull outwardly beyond a certain extent. A convenient part of the structure for thus engaging with the hook 38 is the supporting-iron 3, which projects under the draw-bar. When the hook engages with this iron 3, it of course pulls the stop 17 rearwardly and releases the coupling-jaw, thus separating the couplers before the inner end of the disabled draw-bar has become entirely dislodged from its car. The draw-bar may also be provided with downwardly-projecting lugs 40 for preventing its withdrawal past the iron 3.

In Fig. 12 of the drawings I have shown the bottom of the draw-bar provided with an angular shoulder 41 and the rod 35 with an angular bend 42, which will insure against the hook 36 ever being pulled past the projection 37 on the stop.

The form of my invention shown in Figs. 10 and 11 differs from that already described only in that instead of using a plain link like the link 23 for lifting and oscillating the stop 17 I employ a slotted crank-arm 43, arranged

wholly on the outside of the housing 1^b and receiving the lateral projection of the crank 22, and instead of a plain pivot 19 I journal such pivot in upright slots 31^a in the housing 1^b and provide it with a squared shoulder 44, engaging in a squared aperture in the upper end of the stop 17 instead of the oval slot 31. This form may be employed where it is feared that sleet and dirt will enter the slot 24 at the top of the housing and clog the mechanism; but it is of course evident that any of the well-known devices may be employed for closing the slot 24, if desired.

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

1. A car-coupler having in combination a swinging coupling-jaw provided with a projection, a stop arranged normally in the line of movement of and adapted to be engaged by said projection and being movable transversely of the line of movement of said projection, the rear side of said projection being beveled or rounded so that it may hit against and deflect said stop, and a detent adapted to engage with a part of the said stop for holding it disengaged from said projection, said detent being movable independently of said stop and arranged normally above the arc described by the part of the stop adapted to engage therewith as the stop moves under the pressure of said projection, substantially as set forth.

2. A car-coupler having in combination a swinging coupling-jaw, a pivotal stop for said jaw having lost movement at its pivotal point whereby it may be lifted bodily, and an independently-movable detent having operative relation to said swinging jaw for engaging under and holding said stop when thus lifted, substantially as set forth.

3. A car-coupler having in combination a movable coupling-jaw, a stop pivoted thereon having lost motion at its pivot and a pivoted detent arranged to be engaged by the jaw at one end and means for lifting said stop upon the other end of said detent, substantially as set forth.

4. A car-coupler having in combination a movable coupling-jaw, a stop therefor and a pivoted detent for said stop oscillating in the same plane as the jaw and having operative relation to and controlled in its releasing movement by the opening movement of said jaw, substantially as set forth.

5. A car-coupler having in combination a movable coupling-jaw, a stop for said jaw, and a detent for said stop, said jaw having means for engaging and oscillating said detent when moving in either direction, substantially as set forth.

6. A car-coupler having in combination a pivoted coupling-jaw, a stop for said jaw, a

pivoted detent for said stop, said jaw having an enlarged cavity formed in its rear side and receiving the end of said detent and a salient flange 33 projecting normally across the arc described by the end of said pivoted detent, substantially as set forth.

7. A car-coupler having in combination a pivoted coupling-jaw, having a recess or cavity in its rear side, a loosely-pivoted detent having its end projecting into said recess or cavity and being held from displacement thereby, and a stop for said jaw adapted to be held out of engagement by said detent, substantially as set forth.

8. A car-coupler having in combination a movable coupling-jaw, a swinging bodily-movable stop, a detent therefor arranged normally above the edge of the stop during its swinging movement but below the edge of the stop when the latter's bodily movement takes place, whereby the stop may be lifted into engagement with the detent, said detent being movable horizontally but not vertically, substantially as set forth.

9. A car-coupler having in combination a movable coupling-jaw, a stop for locking said jaw having a tooth, and a detent having a rounded notch for receiving and holding said tooth, said detent being movable horizontally but not vertically, substantially as set forth.

10. A car-coupler having in combination a movable coupling-jaw, a stop for locking said jaw and a detent for said stop, said stop and detent being movable in planes at an angle to each other and in diverging lines whereby the movement of the two in the same direction will eventually effect the release of the stop from the detent, substantially as set forth.

11. A car-coupler having in combination a movable coupling-jaw, a stop for locking said jaw and a detent for holding said stop, said stop and detent being movable in diverging lines whereby the movement of the two in the same direction will eventually effect the release of the stop from the detent and said detent having a portion bearing against said jaw for throwing it open when the stop forces the detent beyond a certain point, substantially as set forth.

12. A car-coupler having in combination a movable coupling-jaw, a pivoted swinging stop therefor bodily movable at its pivot, an independently-movable detent for said stop, and a stop-releasing device pivoted to said stop at a point eccentric of said first pivot and being adapted to throw the stop against and lodge it upon said detent, substantially as set forth.

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