

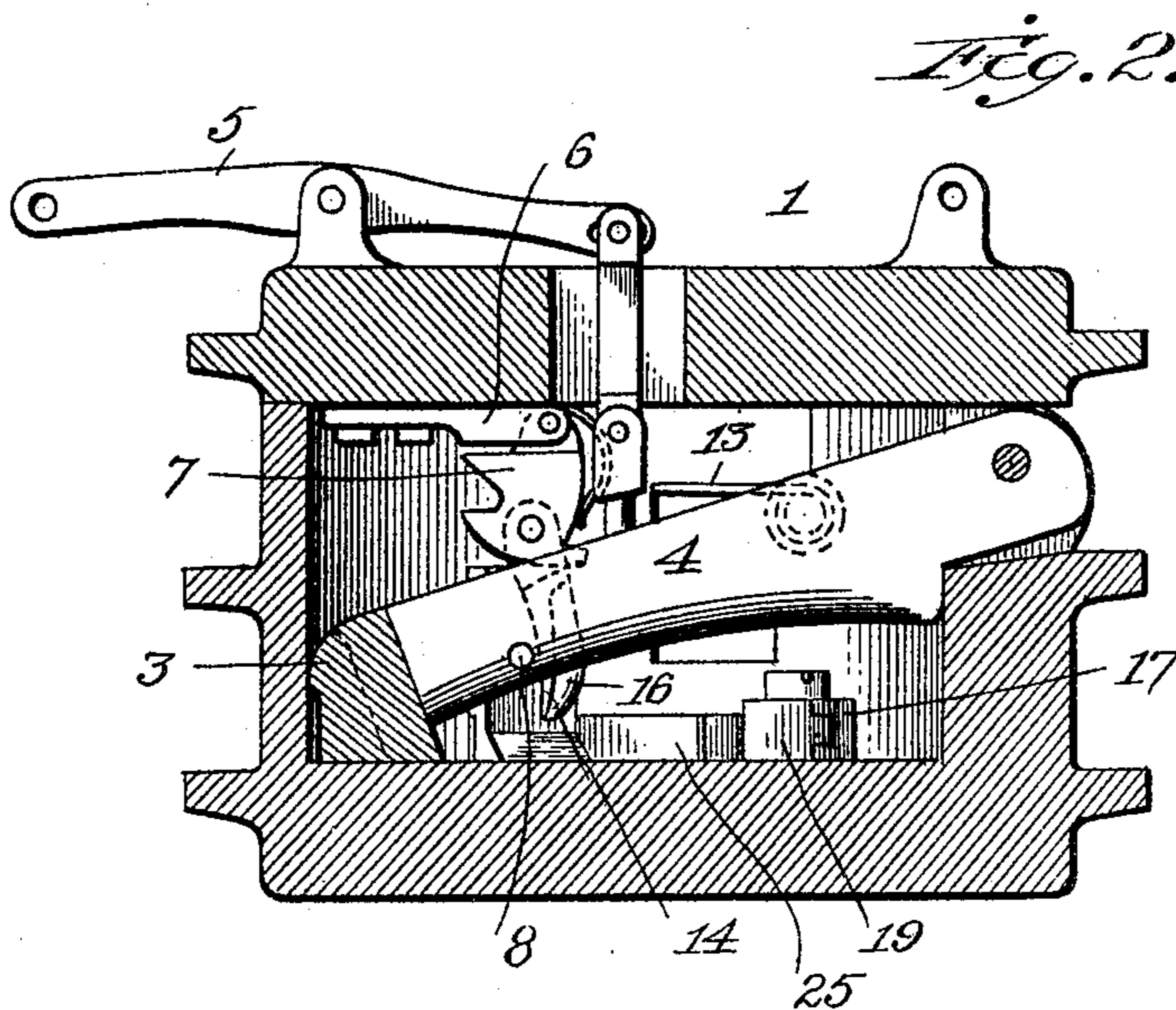
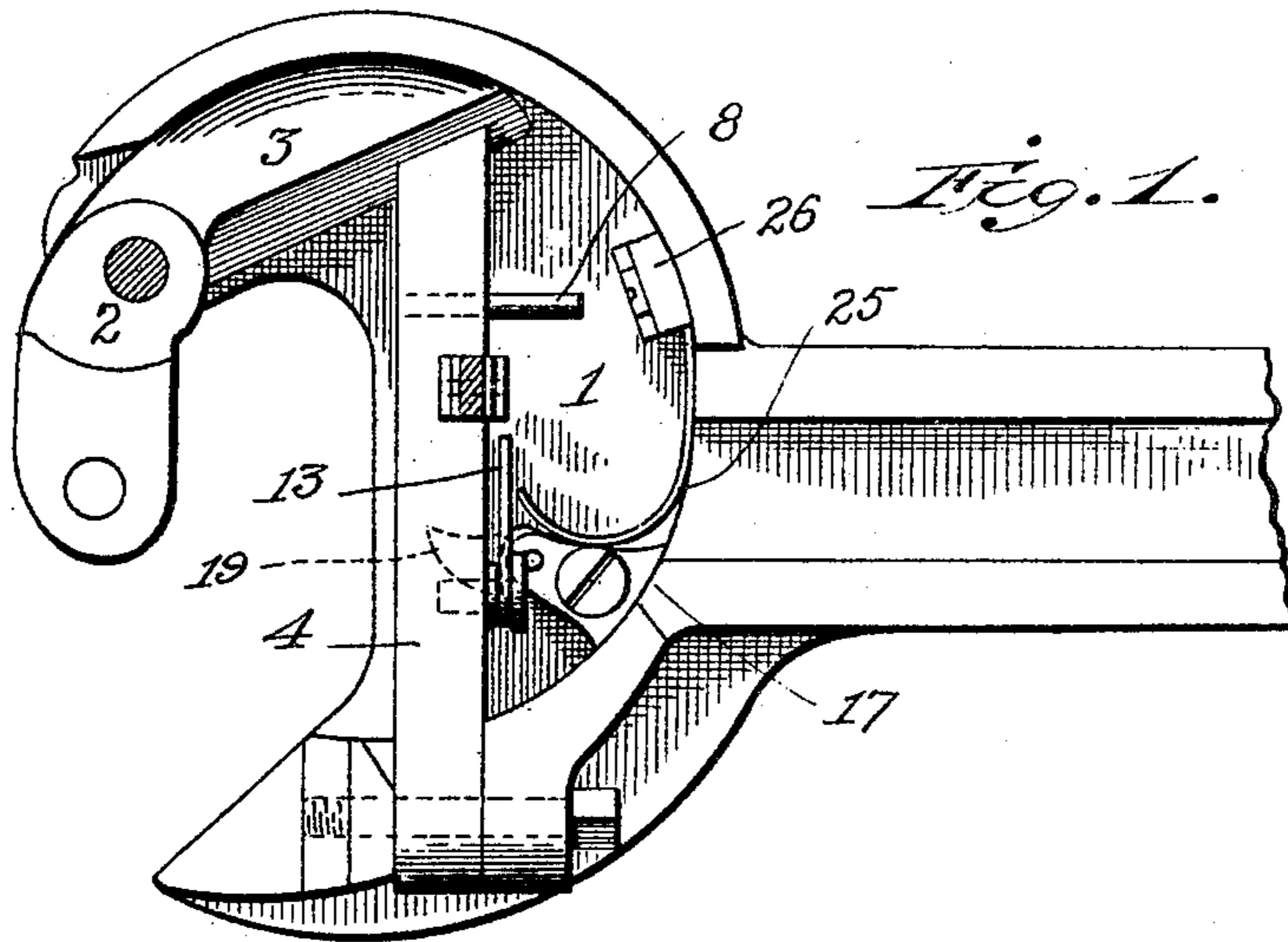
No. 798,322.

PATENTED AUG. 29, 1905.

M. J. CARTER.
CAR COUPLING.

APPLICATION FILED FEB. 16, 1905.

2 SHEETS—SHEET 1.



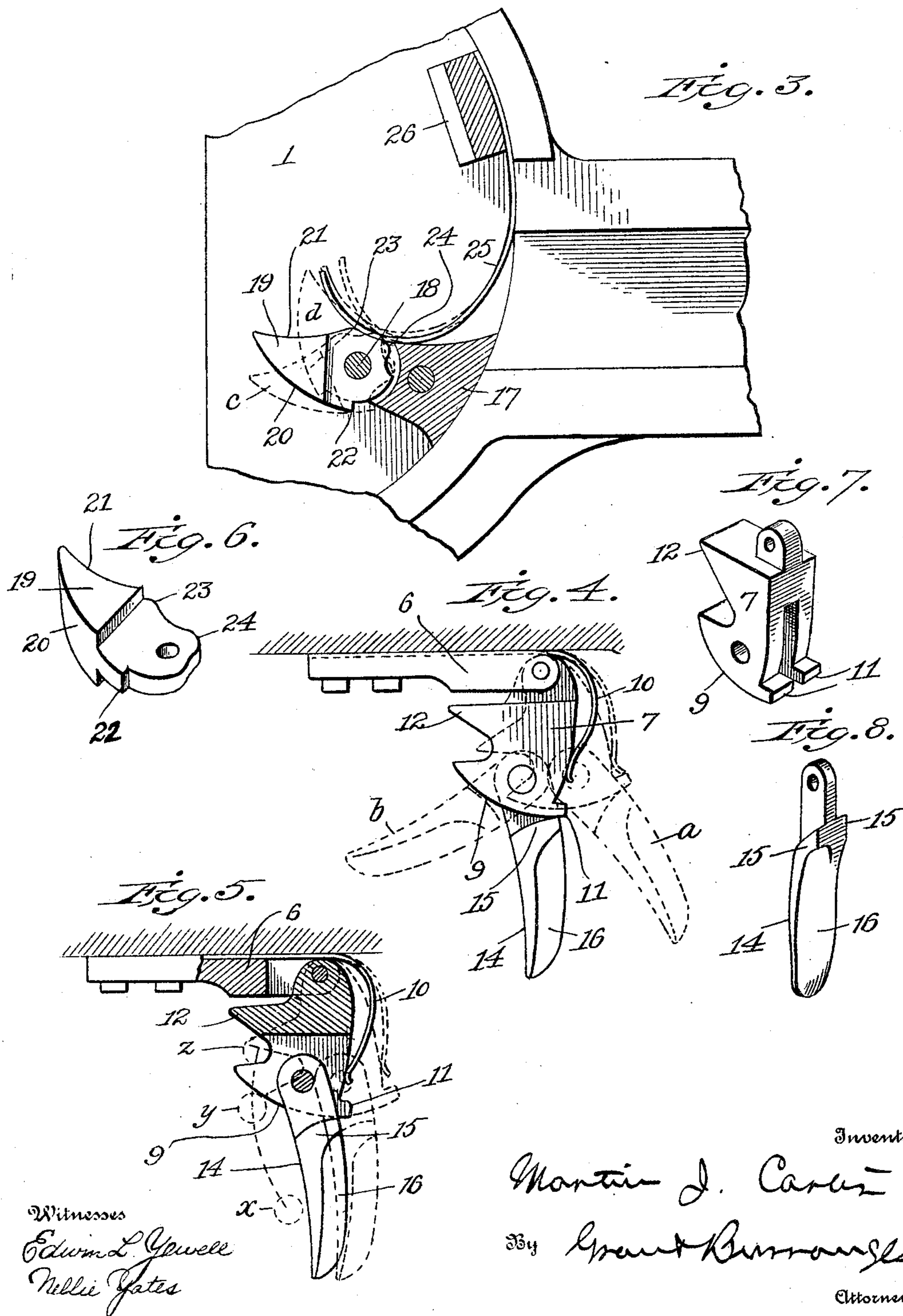
Witnesses
Edwin L. Jewell
Nellie Yates

Inventor
Martin J. Carter
By Grant Burroughs
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

MARTIN J. CARTER, OF ST. LOUIS, MISSOURI.

CAR-COUPLING.

No. 798,322.

Specification of Letters Patent.

Patented Aug. 29, 1905.

Application filed February 16, 1905. Serial No. 245,943.

To all whom it may concern:

Be it known that I, MARTIN J. CARTER, a citizen of the United States, residing at St. Louis, in the State of Missouri, have invented new and useful Improvements in Car-Couplings, of which the following is a specification.

This invention relates to improvements in the car-coupling disclosed in the application filed by me December 10, 1904, Serial No. 236,386. In that device the latch is normally in position to lock the knuckle in a closed position. Consequently, whenever it is desired to uncouple some one must be present to raise the latch so that the draw-heads can separate. Also in that device the knuckle is liable to be accidentally closed previous to coupling by the jarring of the car and other causes. When this happens, the knuckle has to be opened by some one going between the cars before the coupling can be made.

One of the objects of the present invention is to provide mechanism which can be operated to hold the latch in a raised position, so that the coupling can be set to permit the separation of the draw-heads at any time thereafter, and which at the same time will be operated by the movement of the knuckle during the separation of the draw-heads to release the latch so that it will resume its normal position to lock the knuckle when the latter is turned inwardly again during the next coupling.

Another object of the present invention is to provide mechanism to prevent the accidental closing of the knuckle previous to coupling. This mechanism operates to oppose the closing of the knuckle except when considerable force is applied, such as the coming together of two cars, and at the same time offers but slight opposition to the opening of the knuckle when it becomes necessary to do so.

The invention consists in the novel construction, combination, and arrangement of parts, such as will be hereinafter fully described, pointed out in the appended claims, and illustrated in the accompanying drawings.

In the drawings, in which similar reference characters designate corresponding parts, Figure 1 is a plan view of a coupling embodying the invention with the top of the same removed. Fig. 2 is a transverse vertical sectional view of the same. Fig. 3 is an enlarged detail view showing the pawl mechanism for retarding the movement of the

knuckle. Figs. 4 and 5 are enlarged detail views showing the catch mechanism for holding the latch in an elevated position. Fig. 6 is a perspective view of the pawl. Figs. 7 and 8 are perspective views, respectively, showing the catch and the pendent lever.

The main part of the coupling has substantially the same construction and operation as the one described in my former application. Briefly, it consists of the draw-head 1, the knuckle 2, provided with the tongue 3, pivoted in one side of the draw-head, and the latch 4, fulcrumed in the upper part of the opposite side of the draw-head. The latch extends across the draw-head and its free end is normally in a lowered position to engage with the tongue of the knuckle. A lever 5 is connected with the latch for raising the same to free the tongue of the knuckle.

Secured to the under side of the top of the draw-head is the plate 6, and pivoted to the latter is the catch 7, adapted to engage with the pin 8 on the latch 4. The under side of the catch is beveled, as at 9, to ride on the pin 8 when the latch is raised. Between the plate 6 and the top of the draw-head is clamped an end of the spring 10, bearing at its free end against the back of the catch 7. When the latch 4 is raised, the pin 8, riding on the bevel-face 9 of the catch, forces the latter backward against the action of the spring 10. When the latch is raised sufficiently high, the spring forces the lip of the catch beneath the pin, and the latch is thereby held in an elevated position. On the lower part of the back of the catch are the lugs 11 in position to engage with the free end of the spring 10 to compress the latter and to limit the backward movement of the catch. The compression of the spring increases the force with which it will act in pressing the catch into engagement with the pin. The forward movement of the catch when the latter is not in engagement with the pin 8 is limited by the projection 12 on the upper part of the catch contacting with the top of the draw-head.

On the latch 4 and projecting above the same is the buffer-spring 13. The latter coming in contact with the top of the draw-head opposes the raising of the latch. When the latch is raised by the tongue of the knuckle passing under the same, the buffer-spring will prevent the latch from being accidentally raised high enough for the catch 7 to engage

with the pin 8. When the latch is raised intentionally for the purpose of being locked in an elevated position, the force applied through the lever 5 must be sufficient to overcome the opposition of the buffer-spring. After the latch has been raised and locked the spring pressing on the latch will prevent the accidental disengagement of the catch by the jarring of the draw-head.

Mechanism operated by the tongue of the knuckle is provided for releasing the catch 7 from the latch 4. The lower end of the catch is bifurcated, and between the members of the bifurcation is pivoted the upper end of the pendent lever 14. This lever normally hangs so that its lower end is in the path of travel of the tongue of the knuckle. On the opposite sides of the lever are the shoulders 15, of such a formation as to permit a slight movement of the lever relative to the catch in one direction and to permit considerable movement in the opposite direction. As shown in Figs. 4 and 5, the lever can be moved but a short distance to the right before the shoulders 15 engage with the bevel-face 9 of the catch. When the lever is moved to the left, the shoulders do not engage with the bevel-face. Consequently when the lever is moved to the right it will carry the catch with it, and thereby release the pin 8 should the latter be in engagement, and when the lever is moved to the left there will be no corresponding movement of the catch.

When two draw-heads are coupled together and it is desired to leave them so that they can separate without further attention, the train-hand by means of the lever 5 raises the latch 4 against the action of the spring 13. As the latch is raised the pin 8 moves from the position *x*, Fig. 5, until it engages with the bevel-face 9 of the catch 7, as at *y*. The pin in its upward movement bears against the bevel-face of the catch and forces the latter backward against the action of the spring 10. When the pin reaches the position *z*, the spring 10 will force the lip of the catch beneath the pin 8, and the latch thereby will be held in a position to unlock the tongue of the knuckle, so that the draw-heads can separate at any time while the latch is so held.

When the draw-heads separate, the knuckle of the unlocked coupling is turned outwardly. As the knuckle turns, its tongue 3 engages with the lower end of the pendent lever 14 and moves the latter to the right, as shown at *a*, Fig. 4. When the lever is moved in this direction, it carries the catch 7 with it, and the latch 4 is released and drops to its normal locking position. After the tongue passes clear of the lever the catch is pressed forward by the spring 10, and the lever assumes its normal hanging position. When the knuckle is turned inwardly, the tongue engages with the lower end of the pendent lever and moves it to the left, as at *b*, Fig. 4. Owing to the

formation of the shoulders 15 this movement of the lever to the left will not affect the catch. After the tongue has passed beneath the lever the latter drops to its normal hanging position. The face 16 of the lever is beveled, so as to give as little friction as possible to the tongue as it passes to the left.

In the inner part of the draw-head and on the floor of the same is secured the bracket 17, with its inner end abutting the rear wall of the draw-head. The outer end of the bracket is recessed, and pivoted in the same by the pin 18 is the inner end of the pawl or dog 19. The outer or free end of the pawl projects into the path of travel of the tongue 3 of the knuckle. One side of the pawl, as at 20, is shaped to form a convex bearing-surface, and the other side, as at 21, is shaped to form a concave bearing-surface. The movement of the pawl toward the side 20 is limited by the lug 22, contacting with the bracket 17. On the side 21 of the pawl are the two shoulders 23 and 24, respectively, at different distances from the pivoting-pin 18, the outer shoulder 23 being the farther from the pin. Against these shoulders bears the spring 25, clamped between the block 26 and the rear wall of the draw-head. This spring normally holds the pawl in the path of travel of the tongue of the knuckle.

When the draw-heads separate in uncoupling, the unlocked knuckle turns outwardly. During this movement of the knuckle its tongue 3 engages with the concave side 21 of the pawl, and the latter is moved to the position *c*, Fig. 3. This movement of the pawl is resisted by the spring 25, bearing on the shoulder 24. The resistance is comparatively slight, as the distance between the shoulder and the fulcrum of the pawl is short, thereby giving but little leverage to the spring; also, the shoulder tends to lift the spring, and as the latter can yield throughout its entire length it will offer but little opposition to the movement of the shoulder. This movement of the pawl is limited by the lug 22, contacting with the bracket 17. After the tongue passes the pawl the latter resumes its normal position through the action of the spring 25.

A closing movement of the knuckle causes the tongue 3 to engage with the convex side 20 of the pawl and the latter is moved to the position *d*. This movement of the pawl is opposed by the spring 25 pressing on the shoulder 23. This opposition is very strong, as the distance between the shoulder and the fulcrum of the pawl is very much longer than the distance between the shoulder 24 and the fulcrum, and the spring is thereby given much more leverage. Also in this instance the spring is compressed and not lifted as in the opening movement, which also greatly increases the opposition of the spring. After the tongue disengages the pawl the spring moves the latter to its normal position. This

pawl mechanism operates to retard the movement of the knuckle. The retardation is not the same in both the opening and closing movements. The opposition to the opening movement is comparatively little, so that the knuckle can be readily turned by hand for that purpose should it become necessary. The opposition to the closing movement of the knuckle is comparatively great, so that considerable force must be applied, such as the coming together of two cars to close the knuckle. By providing this opposing mechanism the accidental closing of the knuckle will be prevented to a great extent.

It is to be observed that the spring 10 can be adjusted to vary its tension on the catch by loosening and tightening the plate 6. Also the spring 25 can be adjusted to vary the pressure on the pawl 19 by loosening and tightening the block 26.

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

1. In a car-coupling, a draw-head, a knuckle pivoted to said draw-head, a tongue on said knuckle, a latch pivoted in the draw-head to engage said tongue, means for raising said latch, a catch for engaging said latch when the latter is raised, and a lever pivoted to said catch and operated by the outward movement of the tongue to disengage the catch from the latch.

2. In a car-coupling, a draw-head, a knuckle pivoted to said draw-head, a tongue on said knuckle, a latch pivoted in the draw-head to engage said tongue, means for raising said latch, a catch for engaging said latch when the latter is raised, a lever pivoted to said catch and projecting into the path of travel of said tongue, and shoulders on said lever to engage with said catch to trip the latter when the lever is operated by the outward movement of the tongue.

3. In a car-coupling, a draw-head, a knuckle pivoted to said draw-head, a tongue on said knuckle, a latch pivoted in the draw-head to engage said tongue, means for raising said latch, a catch provided with a bevel-face, a pin on said latch to bear on said bevel-face to move the catch when the latch is raised, means for pressing said catch into engagement with said pin, and a lever pivoted to said catch and operated by the outward movement of the tongue to trip the catch from the pin.

4. In a car-coupling, a draw-head, a knuckle pivoted to said draw-head, a tongue on said knuckle, a latch pivoted in said draw-head to engage said tongue, means for raising said latch, a spring-pressed catch for engaging said latch when the latter is raised, and a pendent lever pivoted to said catch and projecting into the path of travel of said tongue

to be operated by the outward movement of the tongue to trip said catch.

5. In a car-coupling, a draw-head, a knuckle pivoted to said draw-head, a tongue on said knuckle, a latch pivoted in the draw-head to engage said tongue, means for raising said latch, a catch provided with a bevel-face, a pin on said latch to bear on said bevel-face to move the catch when the latch is raised, a spring pressing said catch into engagement with said pin, a lever pivoted to said catch and projecting into the path of travel of said tongue, and shoulders on said lever to engage with said bevel-face to trip the catch from the pin when the lever is operated by the outward movement of the tongue.

6. In a car-coupling, a draw-head, a knuckle pivoted to said draw-head, a tongue on said knuckle, a pawl pivoted in said draw-head and projecting into the path of travel of said tongue and provided with a concave bearing-surface to engage with the tongue when the latter is moved outwardly and provided with a convex bearing-surface to engage the tongue when the latter is moved inwardly, and a spring bearing on said pawl to normally hold the same in the path of travel of said tongue and offering comparatively little resistance when the tongue engages with the concave bearing-surface and offering comparatively strong opposition when the tongue engages with the convex bearing-surface.

7. In a car-coupling, a draw-head, a knuckle pivoted to said draw-head, a pawl pivoted in said draw-head and having concave and convex bearing-surfaces to be engaged respectively by said tongue in its outward and inward movements, shoulders on said pawl at different distances from its fulcrum, and a spring bearing on said shoulders to offer comparatively little resistance when the tongue engages with the concave bearing-surface and to offer comparatively strong opposition when the tongue engages with the convex bearing-surface.

8. In a car-coupling, a draw-head, a knuckle pivoted to said draw-head, a tongue on said knuckle, a pawl pivoted in said draw-head and provided with shoulders at different distances from its fulcrum, and a spring bearing on said shoulders to normally hold the pawl in the path of travel of said tongue and offering comparatively little resistance to the opening of said knuckle and offering comparatively strong opposition to the closing of said knuckle.

In testimony whereof I affix my signature in presence of two subscribing witnesses.

MARTIN J. CARTER.

Witnesses:

GRANT BURROUGHS,
FRANCIS S. MAGUIRE.