(No Model.) 2 Sheets—Sheet 1.

E. N. GIFFORD.

CAR COUPLING.

No. 444,697. Patented Jan. 13, 1891.

Fig. 1.

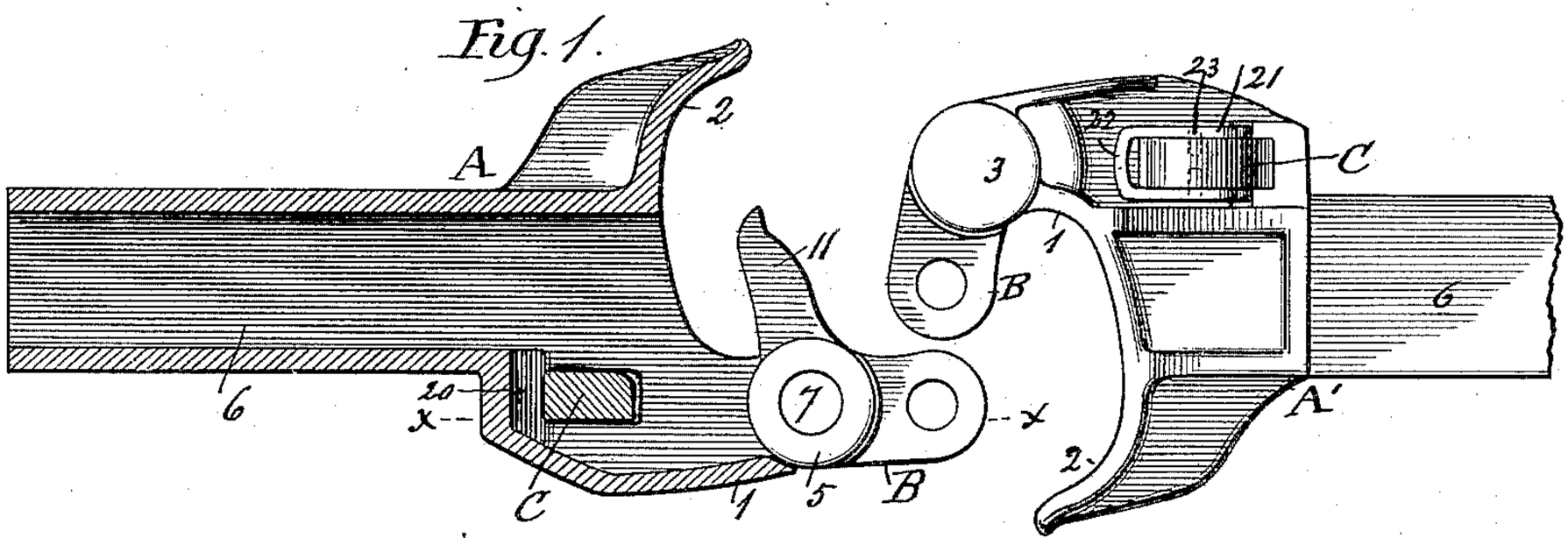


Fig. 2.

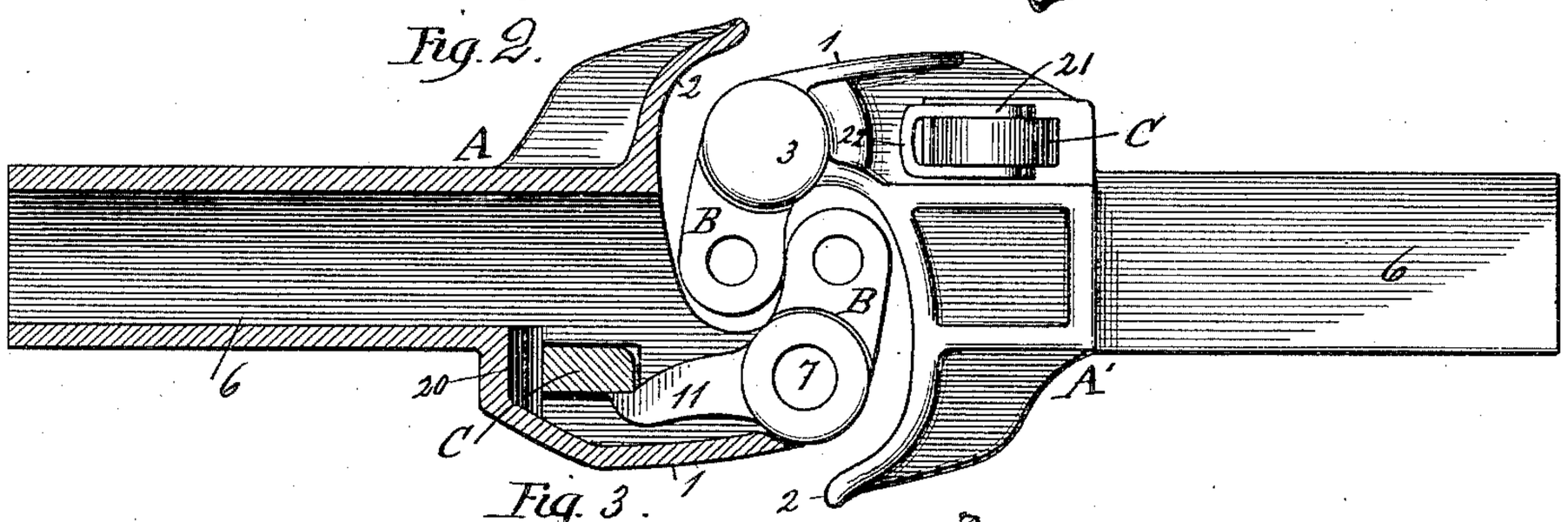


Fig. 3.

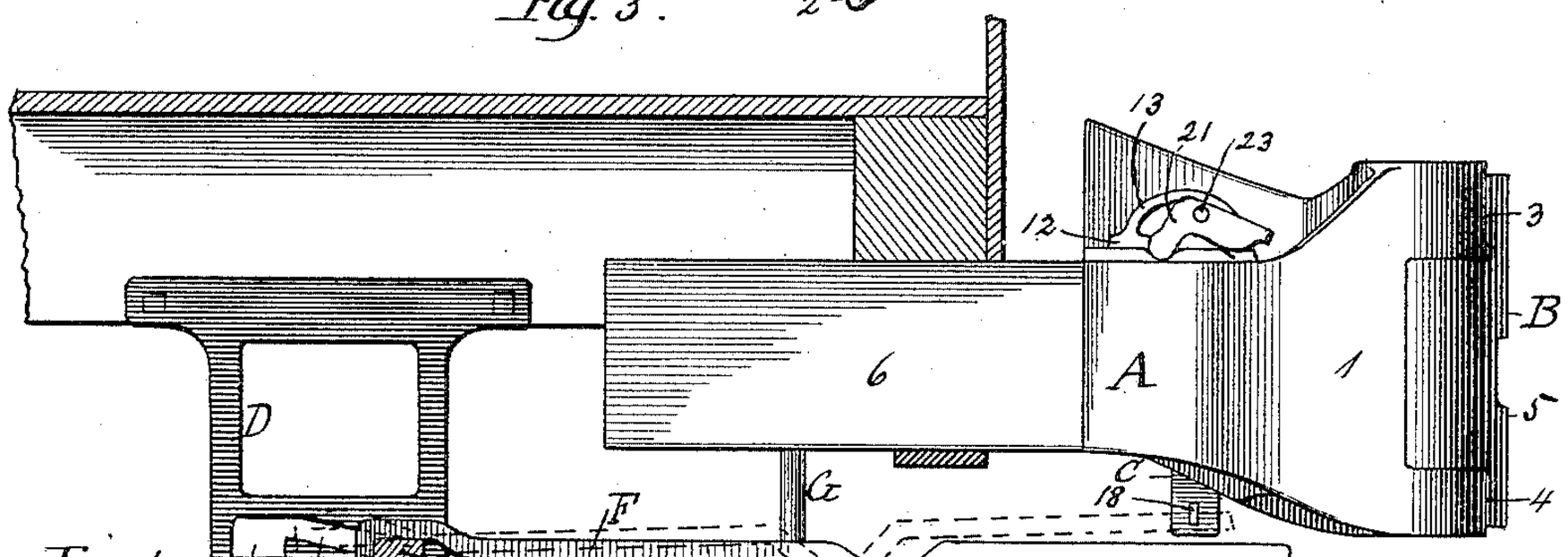


Fig. 4.

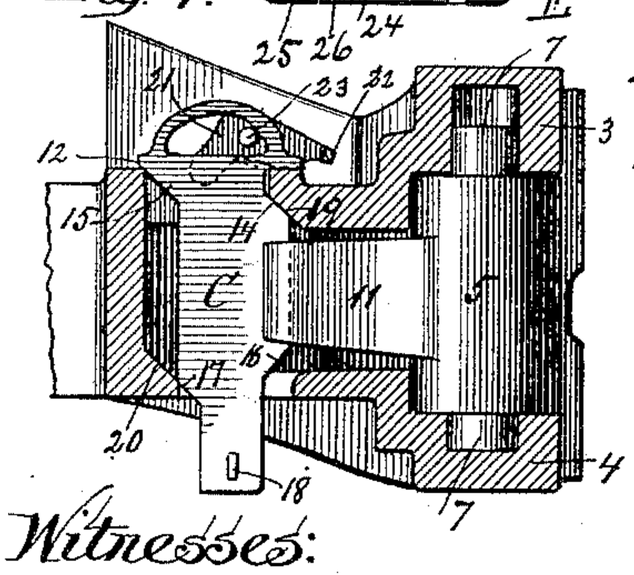


Fig. 5.

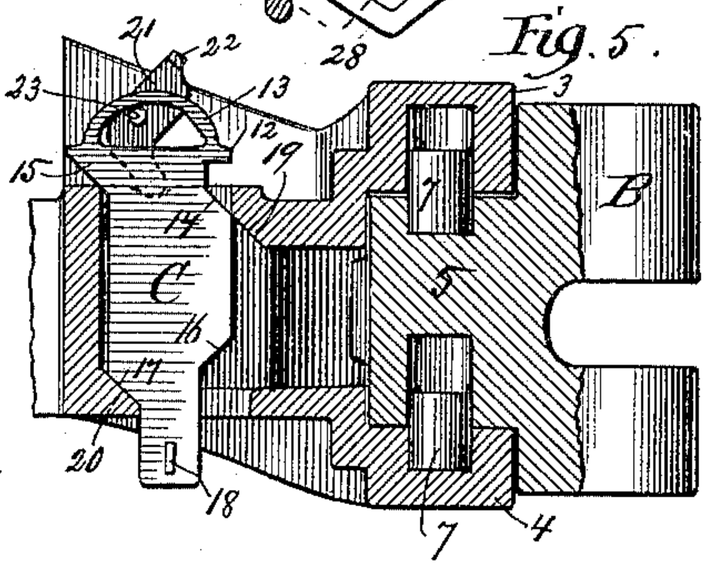


Fig. 6

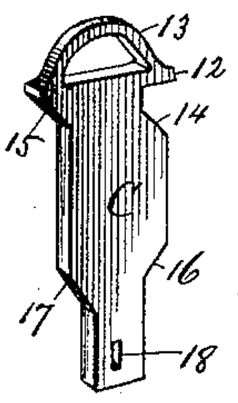
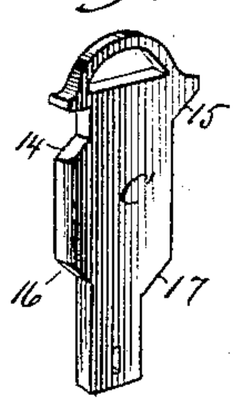


Fig. 7



Witnesses:

Fred Gerlach

Inventor:

Ezra N. Gifford

By Wm H. Lotz

Attorney.

(No Model.) 2 Sheets—Sheet 2.

E. N. GIFFORD.

CAR COUPLING.

No. 444,697. Patented Jan. 13, 1891.

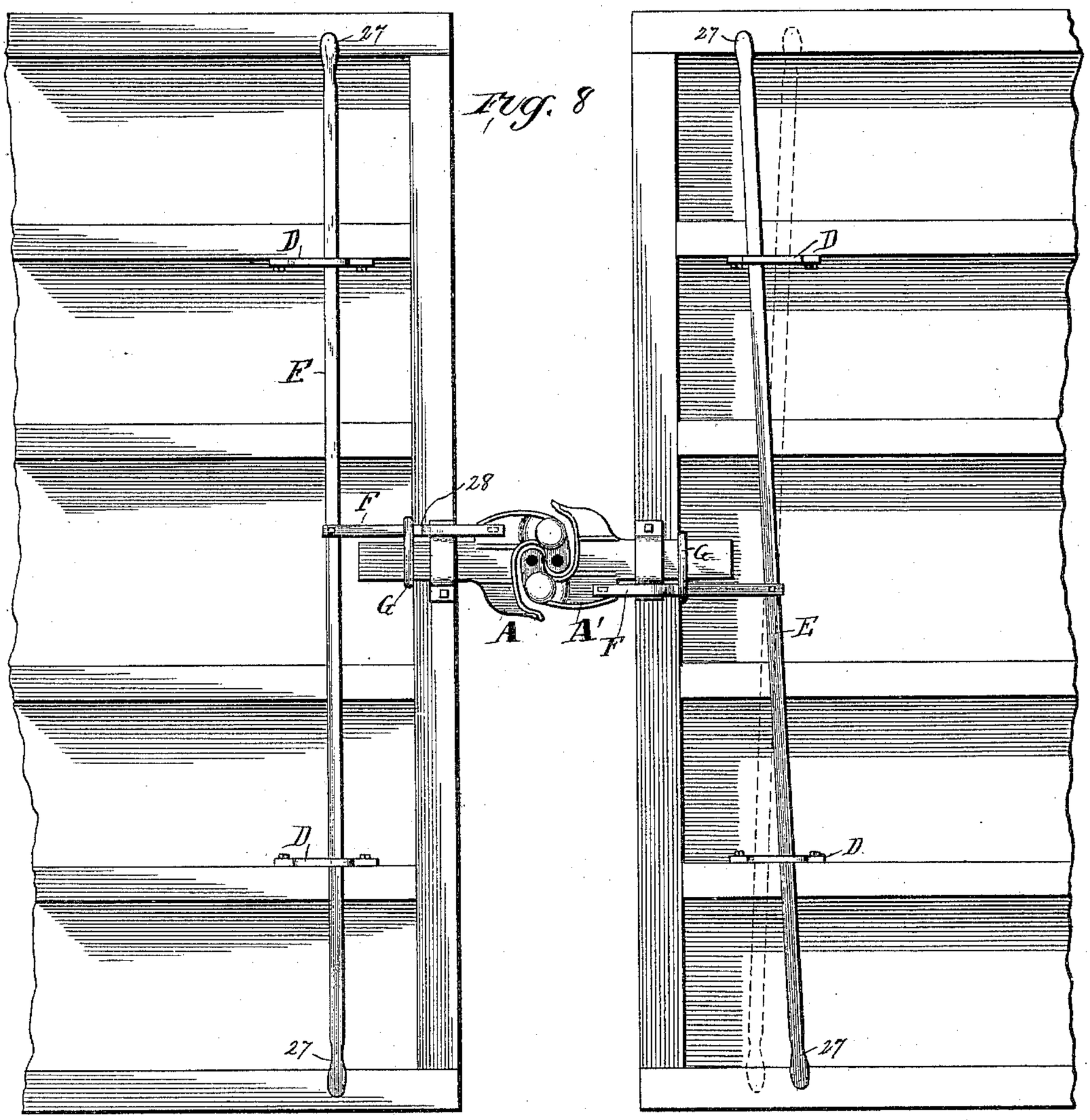


Fig. 8

Witnesses:
Jno. A. Foote.
Fred Gerlach

Inventor:
Ezra N. Gifford
By Wm H Lotz
Attorney.

UNITED STATES PATENT OFFICE.

EZRA N. GIFFORD, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE CHICAGO RAILWAY DEVICE COMPANY, OF SAME PLACE.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 444,697, dated January 13, 1891.

Application filed September 26, 1890. Serial No. 366,226. (No model.)

To all whom it may concern:

Be it known that I, EZRA N. GIFFORD, a citizen of the United States of America, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Car-Couplings, of which the following is a specification, reference being had therein to the accompanying drawings.

This my invention relates to car-couplings of the class in which swinging hooks of two approaching coupling-heads will automatically engage each other and will then be automatically locked in their mutually-grasping positions, all without the use of a spring or springs for such purpose; and more particularly it relates to certain improvements on the coupling described in Letters Patent of the United States No. 434,865, which were granted to me on the 19th day of August, 1890.

The object of this my invention is to so construct the locking-pin for the coupling-hook and its guide-socket that by its own gravity this pin will more readily slide forward for engaging the tail end of the coupling-hook, and to provide in connection therewith a more perfect device for sustaining the locking-pin on its elevated and disengaged position to prevent coupling of two cars, and that at the same time affords a ready releasing of such pin when coupling is desired, and also in a more convenient and reliable device for disengaging such locking-pin from the tail of the coupling-hook for uncoupling the cars from either side of the cars and without stepping or reaching between the same, and in like manner to liberate such pin for a ready engagement of the coupling-hook; and with these objects in view my invention consists of the novel devices and combinations of devices hereinafter described and specifically claimed.

In the accompanying drawings, Figure 1 represents a sectional plan of the couplings of two cars in position before coupling, and Fig. 2 a similar view of the same after coupling. Fig. 3 is a sectional side elevation of the coupling as attached to the floor-sills of the car-body, the usual impact-springs not being shown. Figs. 4 and 5 are sections on line *x x* in Fig. 1, showing the pin in its locking and unlocking positions. Figs. 6 and 7 are perspective views from opposite sides of the locking-pin, and Fig. 8 shows a bottom view of two car ends with my couplings and the coupling-operating devices attached.

Corresponding referential characters in the several figures of the drawings designate like parts.

A and A′ denote the two draw-heads of adjacent cars, the same being of equal size and construction. Each such draw-head is provided with a larger and longer jaw 1 to one side and with a smaller and shorter jaw 2 to its opposite side, both curving out from the intermediate angular end of the body of the draw-head. The jaw 1 is vertically bifurcated, providing two lugs 3 and 4, between which the hub 5 of the coupling-hook B is pivotally secured, and behind these eye-lugs the jaw 1 has formed a cavity communicating with the core of the square shank 6 of the draw-head, which will be mounted upon the end of the draw-bar.

The hub 5 of the coupling-hook B is secured by two cylindrical pins 7, entering sockets in top and bottom of hub 5 and in the inward faces of lugs 3 and 4, and for the purpose of enabling the insertion of these pins 7 I form the upper lug 3 and the socket in the lower end of hub 5 to be deep enough to admit the entire length of a pin 7 in a manner that, with turning the draw-head A and coupling-hook B upside down and then inserting the pins 7, then placing the hub 5 of the coupling-hook B between the lugs 3 and 4 of the draw-head, and, finally, while thus held in proper relative position, again turning the draw-head and coupling-hook to bring its proper side up, the pins 7 will drop by their own gravity one-half their length into the sockets below in hub 5 and lug 4, thereby securely connecting the parts.

The tail 11 of the hook B is free to swing from a transverse position to a longitudinal position into the cavity of the draw-head A behind lugs 3 and 4. This tail 11 stands nearly rectangular to the coupling-hook B, so that the gripping of the hook will cause the end of said tail 11 to engage the locking-pin C. This locking-pin C is rectangular in sec-

tion and perfectly plain on its flat sides, having a head 12, that is the widest portion of the pin, to limit the down movement of the same, and when in a locking position will support it, and just above this head 12 is formed to such pin a loop 13. The forward edge of pin C is notched under its head, providing an angular shoulder 14, that is on a parallel direction with a shoulder 15, formed under the rear end of the head 12 of such pin. Below these shoulders 14 and 15 the pin C is formed with parallel edges, and the bottom end of the pin is reduced in width, providing shoulders 16 and 17, the forward shoulder 16 being oppositely angular to shoulders 14 and 15, while the rearward shoulder 17 is on same or parallel directions with shoulders 14 and 15. The lower end of the pin C has parallel edges and is slotted for a split key 18. This pin C is inserted into a rectangular slot in one side of the draw-head, the length of which slot is equal to the width of the central body of the pin, with its upper and lower openings not vertically in line, however. Forwardly and downwardly the upper slot is chamfered to an angle 19, coinciding with angular shoulder 14 of the pin C, and just above the lower slot is formed a rearwardly angular shoulder 20, coinciding with shoulder 18 of the pin C, whereby with lifting this pin C the shoulder 14 will guide it to move rearward, with its shoulder 15 riding upon the rear upper corner of the slot and with its shoulder 18 riding upon shoulder 20 of the slot, so that the middle front edge of pin C will clear the end of tail 11 of the coupling-hook B, which then is free to swing for releasing its grasp on the opposite coupling, and on releasing-pin C again it will, by its own gravity, slide down upon shoulders 15 and 17 to move forward for engaging the end of the tail 11 of the coupling-hook B. The outward edge of the end of the tail-piece 11 of the coupling-hook is chamfered so that with the impact of two cars coupling this tail 11, with meeting the pin C, will push the same back and thereby will cause the same to be raised by riding on its angular shoulders 15 and 17, and then after the end of tail 11 has passed by such pin C to clear the same said pin will drop again with a forward movement for locking such tail 11 against a return swinging movement of the coupling-hook. The key 18 is for preventing the pin C from being lifted out of its slot entirely.

Two angular dogs 21, connected by a cross-piece 22, are placed over the loop 13 of the pin C, and their lower rounded ends rest in cavities in the top of the draw-head at each side of the slot for said pin C. Each such dog 21 has an inwardly-projecting stud 23, that engages the loop 13, all in a manner that by swinging the dogs 21 rearward by taking hold of cross-connection 22 the pin C will be lifted, and as with lifting it is moved rearward the studs 23 will follow such movement until such dogs 21 are in an upright position, as shown by Fig. 5, with the studs 23 on a line rearward of the vertical line of the lower ends of the dogs that bear in the cavities of the draw-head, when such dogs will sustain themselves and will support the pin C against dropping and locking the coupling-hook. The object of this is to prevent cars from coupling while being pushed during switching whenever so desirable. A slide movement given to the dogs 21 by means of a stick in a forward direction will cause the same to tumble and occupy the position shown in Fig. 4, when the locking-pin C is liberated to drop for engaging the tail 11 again.

For coupling or uncoupling from either side of the cars without stepping or reaching between the same my device is so arranged that it will not be affected or interfered with by the longitudinal movements of the draw-head in its guideways between the sills of the car-body as occasioned by the impact or irregular strains that a draw-head is subjected to. For this purpose I secure to the sills of the car-body two hangers D at proper distance apart, each with a slot 24 inclined from the front toward the rear, where it leads into a downward recess 25, forming a shoulder 26. Through both these slots 24 is placed a straight rectangular bar E, of a length nearly the width of the car-body, and having formed a handle 27 to each end. This bar may be swung from either end to move in the slot of hanger D on that side, while the opposite hanger D will provide the swinging fulcrum. To the middle of this bar E is coupled, so as to have a slight pivotal movement thereon, one end of a bar F, extending with its opposite end forward under the locking-pin C. This bar F is supported at about its middle on a stirrup G, secured under the car-body, and just forward of this stirrup G the bar F is bent to form a downwardly-pointing V 28, so that on pulling such bar F rearward the inclined surface of its V portion will ride upon such stirrup, and thereby the forward end of bar F will be raised and will lift the pin C. Thus as long as the bar E with both ends is in its forward position toward the coupling the bar F will be in the position as shown by full lines in Fig. 3, clearing the pin C, while with swinging either end of bar E to rest in the recess 25 behind shoulder 26 of one of the hangers D the bar F will be in position as shown by dotted lines in Fig. 3, and the coupling-pin C will be lifted to be held out of engagement with the tail 11 of hook B. After thus uncoupled and it is desirable to release the coupling-pin C again the bar E only requires to be lifted out of recess 25 and swung to its forward position, which can be accomplished from either side of the car—that is, from the side of the hanger D, with the recess 25 of which the bar E is engaged by lifting the handle of bar E and then swinging it forward or from the opposite side of the car by depressing the handle of bar E, whereby the hanger D on that side will form the support on which the opposite end of the bar

will be lifted to clear the recess of the opposite hanger D, when by their own gravity the bars E and F will resume their forward positions.

What I claim is—

1. In a car-coupler, substantially as described, the combination, with the draw-head and swinging hook pivoted thereto, of a locking-pin moving longitudinally in a vertical slot of the draw-head upon inclined shoulders to be lifted with being pushed backward and out of engagement with the tail end of the swinging hook and to move forward on such shoulders by its own gravity, a loop formed to the head of such pin, and a dog resting upon the top of the draw-head and having studs engaging the loop of the pin so that on swinging such dog it will lift and hold the pin out of engagement with the tail of the coupling-hook, substantially as set forth.

2. In a car-coupler, substantially as described, the combination, with the draw-head and swinging hook pivoted thereto and a locking-pin moving longitudinally in a vertical slot of the draw-head upon inclined shoulders to be pushed backward and out of engagement with the tail end of the swinging hook with being lifted and to move forward on these shoulders by its own gravity, of a transverse bar under the car-body, supported in slotted hangers, each slot having a shouldered recess, and of a longitudinal bar coupled with the transverse bar and extending under the coupling-pin, such longitudinal bar being supported on a stirrup of the car-body and having a V bend that with a rearward movement will ride upon the stirrup and will lift such longitudinal bar, that will raise and thereby disengage the locking-pin of the coupling-hook, all substantially as set forth.

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

EZRA N. GIFFORD.

Witnesses:

WILLIAM H. LOTZ,

OTTO LUEBKERT.