(No Model.)

3 Sheets—Sheet 1.

E. N. GIFFORD.

CAR COUPLING.

No. 434,865. Patented Aug. 19, 1890.

Fig. 1

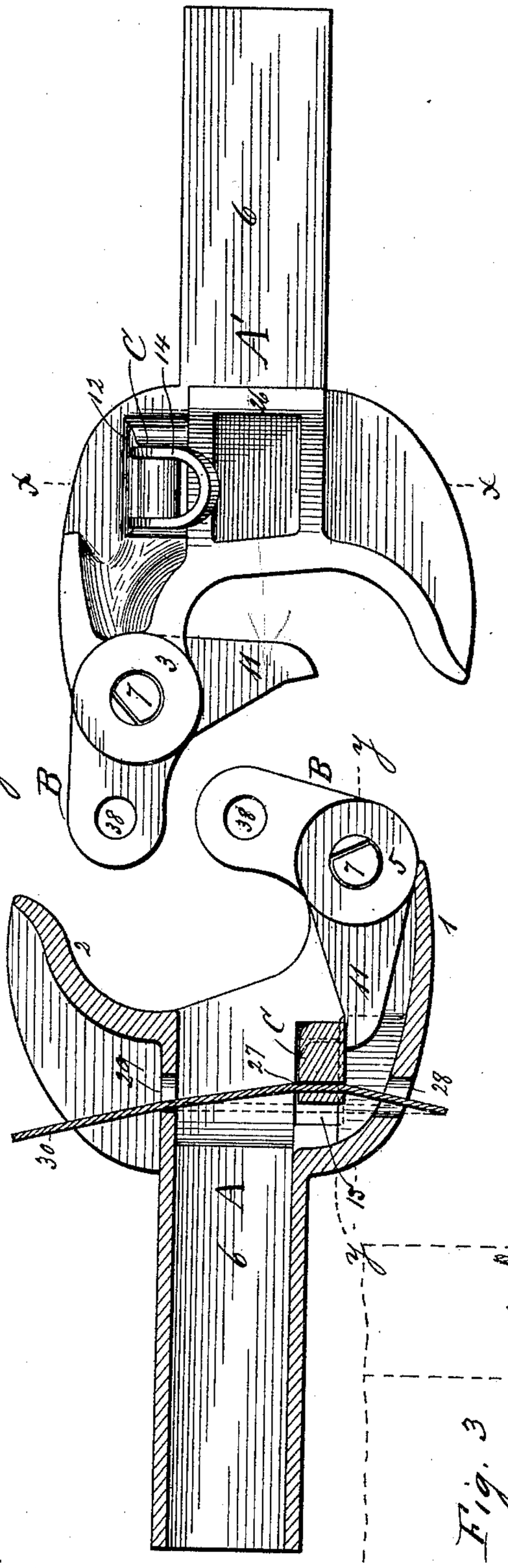


Fig. 2

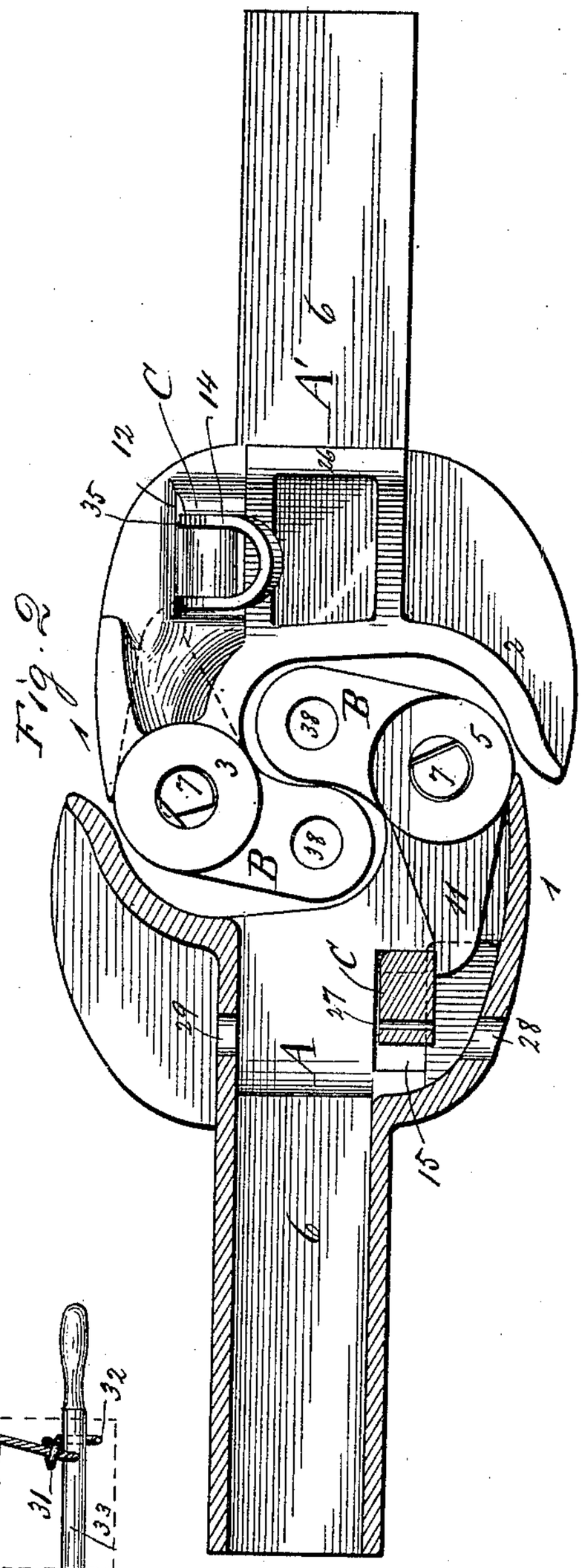
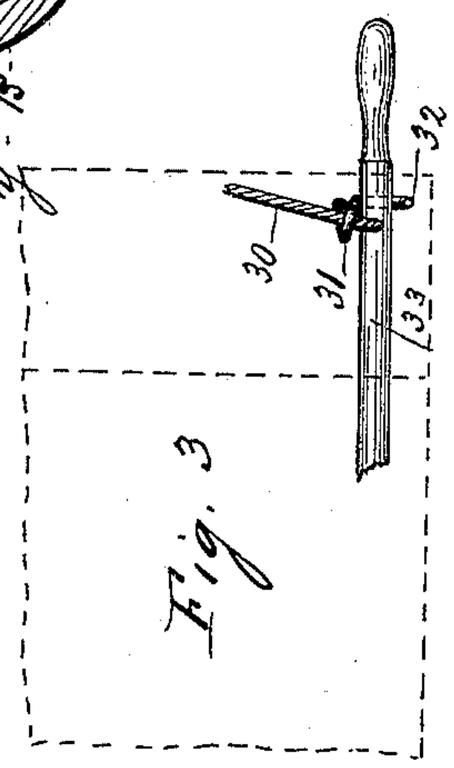


Fig. 3



Witnesses.
Otto Luebkert
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his Attorney

(No Model.)

3 Sheets—Sheet 2.

E. N. GIFFORD.

CAR COUPLING.

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Fig. 4

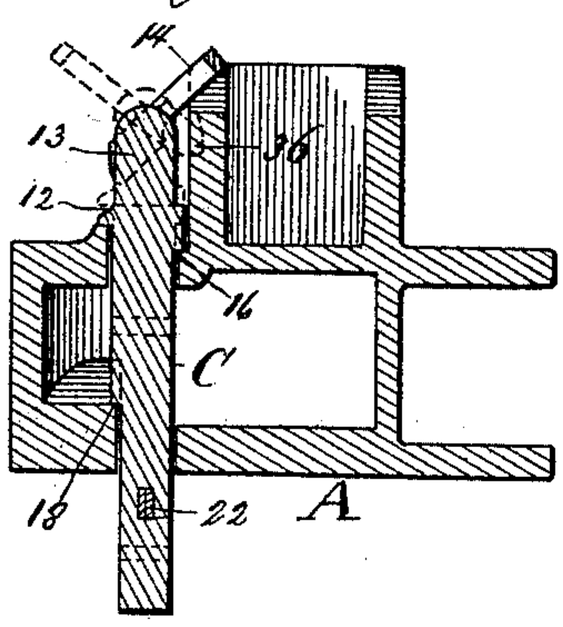


Fig. 5

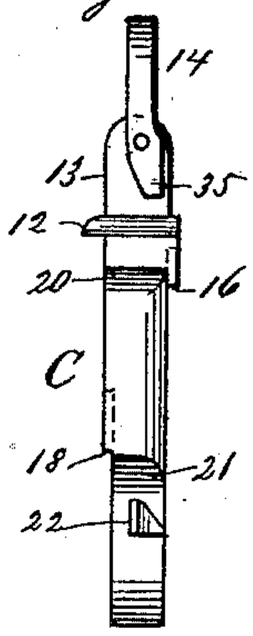


Fig. 6.

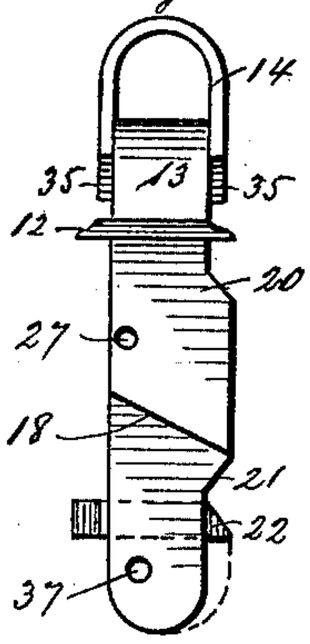


Fig. 7

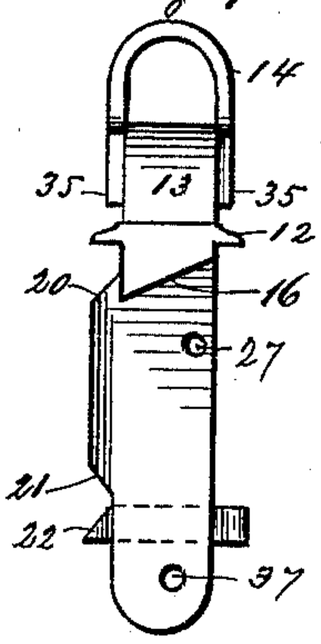


Fig. 8

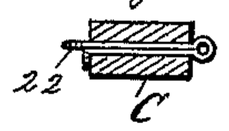


Fig. 9

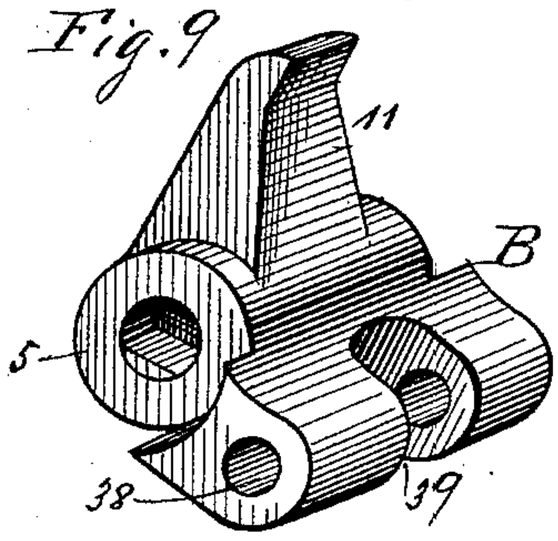


Fig. 10

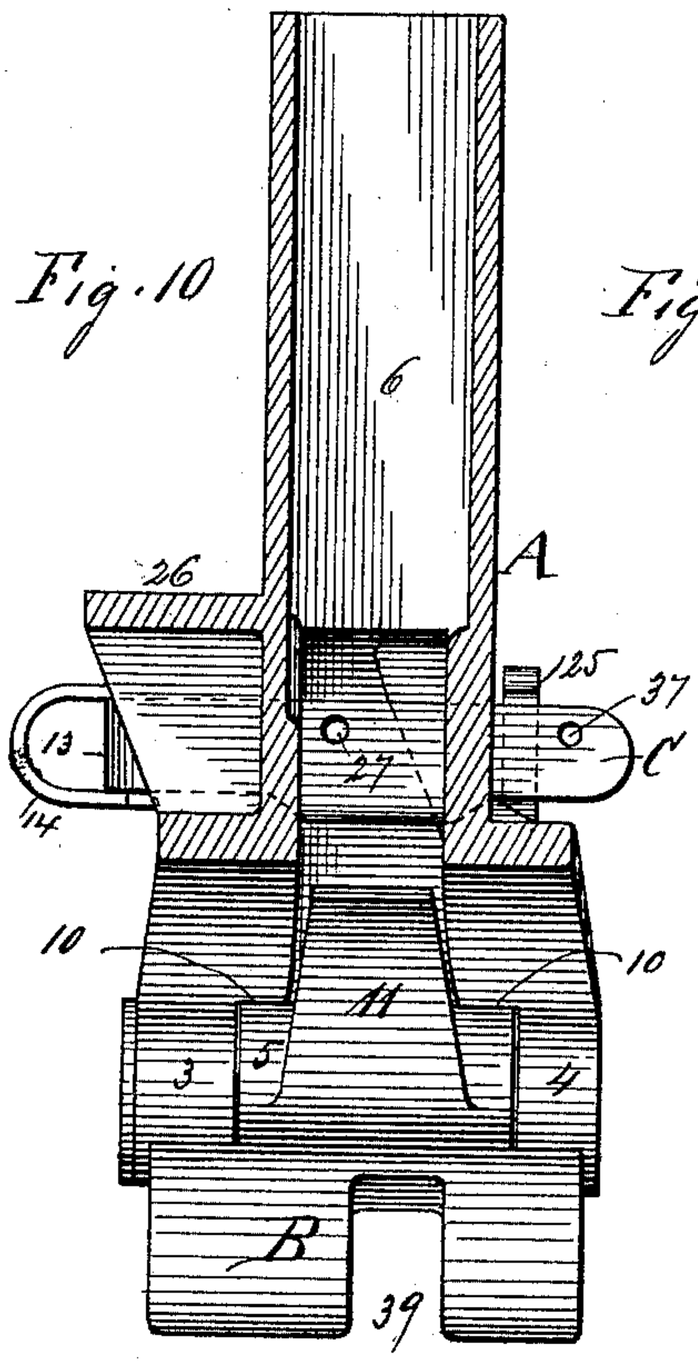


Fig. 11

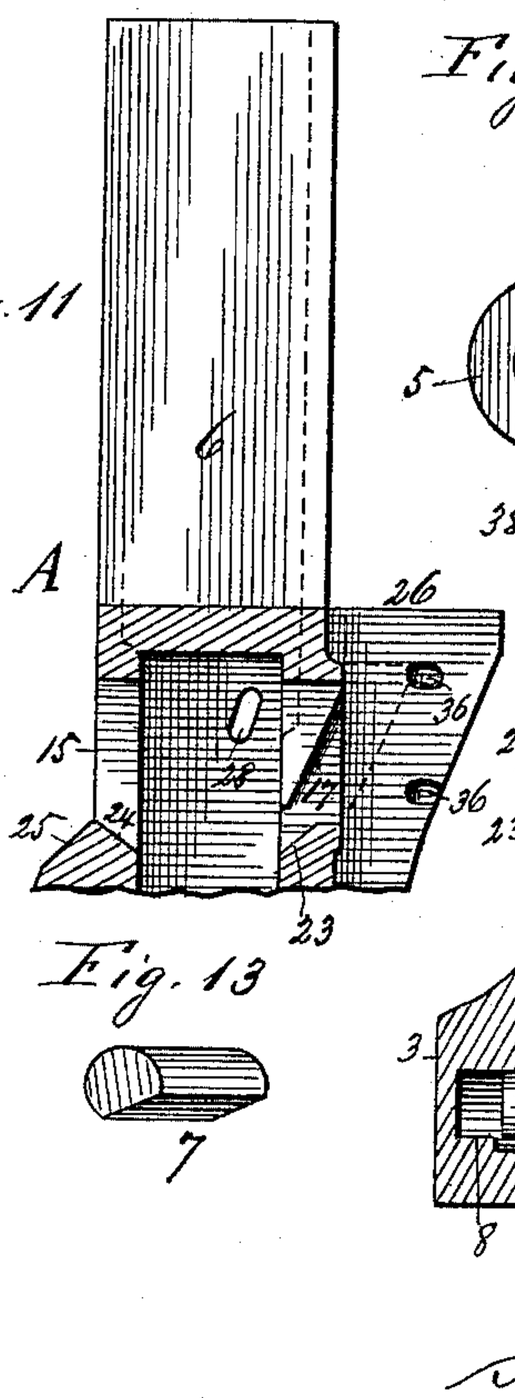
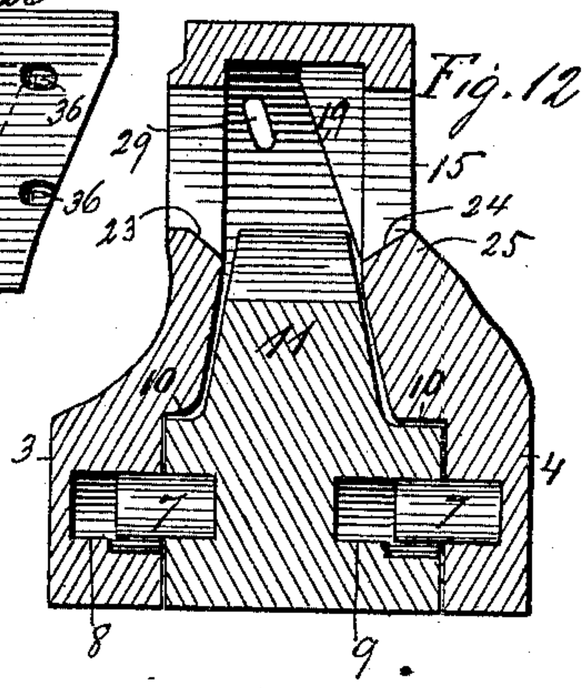


Fig. 13

Fig. 12



Witnesses:
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(No Model.)

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E. N. GIFFORD.

CAR COUPLING.

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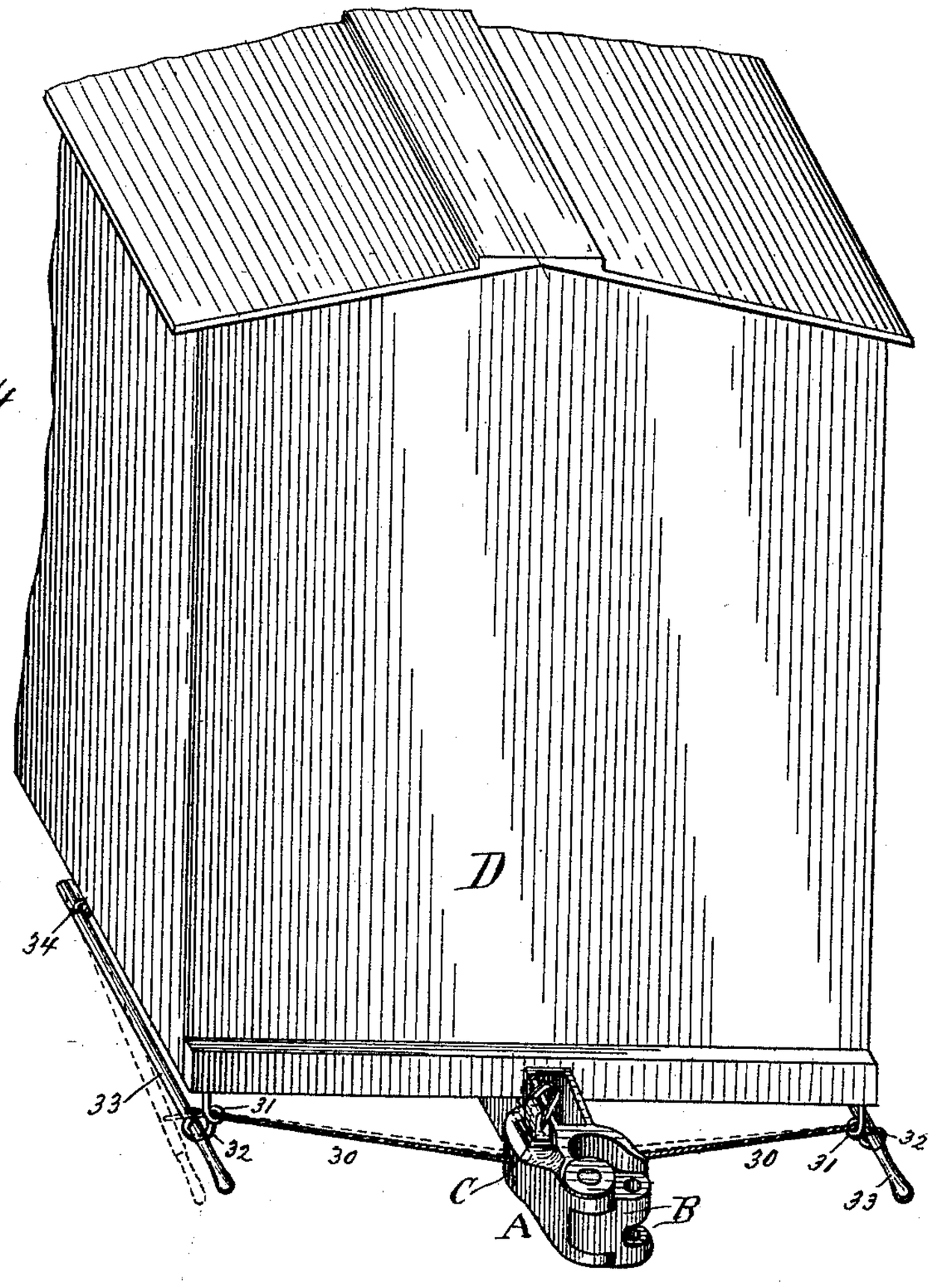
Fig. 14



Witnesses:
Otto Luebkert
John L. Pearson.

Inventor:
Ezra N. Gifford
By Wm H. Lotz
his attorney

UNITED STATES PATENT OFFICE.

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

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 434,865, dated August 19, 1890.

Application filed May 21, 1890. Serial No. 352,643. (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 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 on their mutually-grasping positions, all without the use of a spring or springs for such purposes.

The object of this my invention is to provide a coupling of the class described that will be simple, strong, and durable in its construction, and in which no part or parts can get out of order to become inoperative, and also in connection with such coupling to provide simple means for uncoupling or for preventing cars to couple without the necessity of the operator to step or reach between the cars; 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 plan view of one end of one of the uncoupling-levers. Fig. 4 is a cross-section on line *x x* in Fig. 1. Fig. 5 is an edge view, Figs. 6 and 7 are side views, and Fig. 8 is a section, of the locking-pin detached. Fig. 9 is a perspective view of the coupling-hook detached; Fig. 10, a longitudinal vertical section through the center line of the coupling. Figs. 11 and 12 are longitudinal vertical sections on line *y y* in Fig. 1, with the views taken from opposite sides. Fig. 13 is a detached perspective view of one of the pivot-pins for the coupling-hook, and Fig. 14 represents a perspective end view of a car with my automatic coupling and the uncoupling levers thereon.

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 like 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 may be pivotally secured by a pin passed through eyes in lugs 3 and 4 and through an eye in hub 5; but I prefer to secure this hub, in the manner shown, by two pins 7, each having the shape of a parallel cylindrical ungula, as shown by Fig. 13, 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 socket of 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-heads 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; and for the purpose that these pins 7, from the jumping and pounding of the car or from any other cause, may not be lifted from their lower sockets, I have formed the socket in top of the hub 5 and the socket in lug 4 in conformity with the ungula shape of pins 7, so, when inserted, to be held from turning therein; and again I have formed the upper half length of the socket in lug 3 at 8, and the upper half length of the socket

in the bottom end of hub 5 ungula shape, while the lower half lengths of these sockets are formed cylindrical, that while the draw-head and coupling-hook are placed upside down the pins 7 will drop into these ungula-shaped socket parts, and then with reversing the parts and while holding the coupling-hook B in its outturned position, so as to bring the several ungula-shaped sockets relatively in line with each other, the pins 7 will drop into the lower sockets a sufficient distance to clear the ungula-shaped portions 8 and 9 of the upper sockets, and to allow the upper halves of pins 7 to turn in the lower cylindrical halves of these upper sockets. By this device, with turning coupling-hook B to its gripping position, the lower segmental shoulders of the ungula sockets 8 and 9 will prevent pins 7 from lifting. By this device it will be also seen that the hubs 3 and 4 can be cast solid on their outer faces, which will largely increase their strength. The ends of hub 5 of the coupling-hook B bear against inward segmental shoulders 10 between lugs 3 and 4 for the purpose that the pins 7 may be protected against the thrust or impact with coupling or pushing the cars, such force being brought against the solid metal of the draw-bar.

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 section, with a flange 12 to near its upper end, and with head 13 above this flange, to which is pivotally secured a bail-handle 14. This pin C is inserted into a rectangular slot 15 in one side of the draw-head, which slot is sufficiently longer longitudinally than the pin C is wide, so that this pin can be shifted backward longitudinally to disengage and clear the end of shank 11. To one side the pin C has an angular shoulder 16 coinciding with the shoulder 17 in slot 15, and to its opposite side the pin C has an angular shoulder 18 coinciding with the shoulder 19 in slot 15, the opposite shoulders of the pin as well as the slot being parallel with each other and inclining toward the rear in a manner that with pushing such pin C rearward in its slot 15 it will ride on these shoulders to be elevated, and then with releasing said pin again it will by its own gravity slide forward to its former position. The side of the end of tail 11 of the coupling-hook that after locking is to be in engagement with pin C provides a surface on radial line with the fulcrum of hook B, while the opposite side of the tail end is chamfered that with swinging it will automatically push back the pin C to pass by the same, and then after clearing such pin C the same will slide forward again by its own gravity upon its inclined shoulders. The pin C in its forward edge below flange 12 has an upper inclined shoulder 20 that is on the same angle and in the same direction as shoulders 16 and 18, and below shoulder 18 it has to its edge another shoulder 21 that is on an angle opposite to shoulder 20, whereby the portion intermediate of shoulders 20 and 21 of the pin is made wider, and below shoulder 21 the said pin C is provided with another shoulder in the same direction as shoulder 20, which shoulder may either be formed in the edge of the pin to be solid therewith, as shown by dotted lines in Fig. 6, or it may be formed by one slanting end of a doubled or split key 22 inserted into a slot in the lower end of pin C, with the end of the other half of such key bent over against the forward edge of pin C for holding it in position. The forward end of slot 15 has formed an incline 23, coinciding with the shoulder 20 of the pin C, an incline 24 coinciding with the shoulder 21 of the pin C, and the body of the coupling A provides an angular face 25, coinciding with the angular end of key 22, all in a manner that when the pin C is on its forward position the several inclines of the said pin C and slot 15 are in contact and engagement, whereby the forward edge of said pin will be afforded a more solid bearing in the forward end of the slot by such double engagement, and whereby the shifting movement of the pin C with moving it rearward must be a parallel one, since the shoulder 20 of such pin and the angular end of pin 22 will form guides co-operating with the guide-shoulders 16 and 18.

To the draw-head A is formed a shoulder 26, in the usual manner, to butt against the end of the car-body during a heavy thrust, while the car is to be coupled or pushed.

Through the body of pin C is drilled a hole 27, and oval perforations 28 and 29 are formed in the sides of the body of the draw-head on a little more rearward position than hole 27 in such pin when the same is on its forward position, and a cord 30 is passed through all these holes and through eyes 31, formed integral with hooks 32, one under each corner of the car-body B, with the ends of such cord 30 secured each to the forward end just behind the handle of a bar 33, each such bar 33 being suspended with its rear end under the side of the car by means of a staple 34, so as to swing thereon. This cord, as will be noticed, is on an obtuse angular line from pin C toward eyes 31, and as long as the forward ends of both bars 33 are supported in hooks 32 the cord 30 will be slack and will not interfere with the free sliding movement of pin C, but with lifting either one of bars 33 from its hook 32 to be suspended on cord 30 the weight of such bar will be sufficient to draw such pin C backward and out of engagement with the tail end 11 of the coupling-hook B, thereby releasing such coupling-hook B for uncoupling the car, while for coupling again such bar 33 need only be replaced into

hook 32, whereby the pin C will be released again. With this arrangement it will be readily seen a car can be uncoupled or can be prevented from coupling by the yardman without stepping or reaching between the cars. In case the cord 30 should break, then the car can be prevented from coupling, when desirable, by swinging the bail-handle 14 to the opposite side, as shown in dotted lines in Fig. 4, this bail-handle having two pawl-like extensions 35 below its pivots, which will engage notches 36 in the side of the bracing-rib of shoulder-flange 26 for locking the pin C on its rearward elevated position, and then for releasing pin C the operator, by his hand or by means of a stick, only needs to swing bail-handle 14 back to its inward reclining position, whereby the pawl-like extensions 35 will at once clear the notches 36 again.

The cord 30, instead of being passed through hole 27 of pin C, may as well be passed through the handle 14 or through a hole 37 in the bottom end of the pin C.

The coupling-hook B has an eye 38 vertically through its end, and has a notch 39 vertically in its middle portion for a common coupling-link to enter and be connected by a common coupling-pin in case a car is to be coupled having the heretofore usual common link-and-pin draw-head.

What I claim is—

1. In a car-coupler, substantially as described, the combination of the draw-head having a bifurcated jaw providing end lugs having central sockets in their inward faces, and the coupling-hook also having sockets in the ends of its hub, and pins inserted into such sockets to form the pivotal connection between these parts, as set forth.

2. In a car-coupler, substantially as described, the combination, with the draw-head having a bifurcated jaw providing end lugs with vertical sockets in their inward faces, the lower one being entirely and the upper one in its upper half ungula-shaped, of the coupling-hook, also provided with sockets in the ends of its hub, the upper one being entirely and the lower one in its upper half ungula-shaped, and ungula-shaped pins inserted in these sockets, as and for the purpose set forth.

3. In a car-coupler, substantially as described, the combination, with the draw-head and swinging hook pivoted thereto, of a locking-pin moving 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, as set forth.

4. 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 its sides, coinciding with shoulders in such slot, 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, and angular shoulders to its forward edge, engaging similar shoulders in the forward end of the slot for holding the pin from vertical movement and for insuring a parallel rearward movement of the same, as set forth.

5. 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 bail-handle to such pin, provided with pawl-like extensions, and notches in the draw-head for the engagement of the handle-extensions while the pin is on its rearward position, as and for the purpose set forth.

6. In a car-coupler, substantially as described, the combination, with the draw-head and swinging hook pivoted thereto, 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, of a cord passed through such pin and through eyes at the corners of the car and secured with its ends to the ends of the swinging bars at the sides of the car, supported in hooks, either one swinging bar when disengaged from the hook to produce by its gravity sufficient tension to the cord for shifting the pin out of engagement with the tail end of the coupling-hook, as set forth.

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

EZRA N. GIFFORD.

Witnesses:
WILLIAM H. LOTZ,
OTTO LUEBKERT.