(No Model.) 2 Sheets—Sheet 1.

J. F. HAY.

CAR COUPLING.

No. 566,907. Patented Sept. 1, 1896.

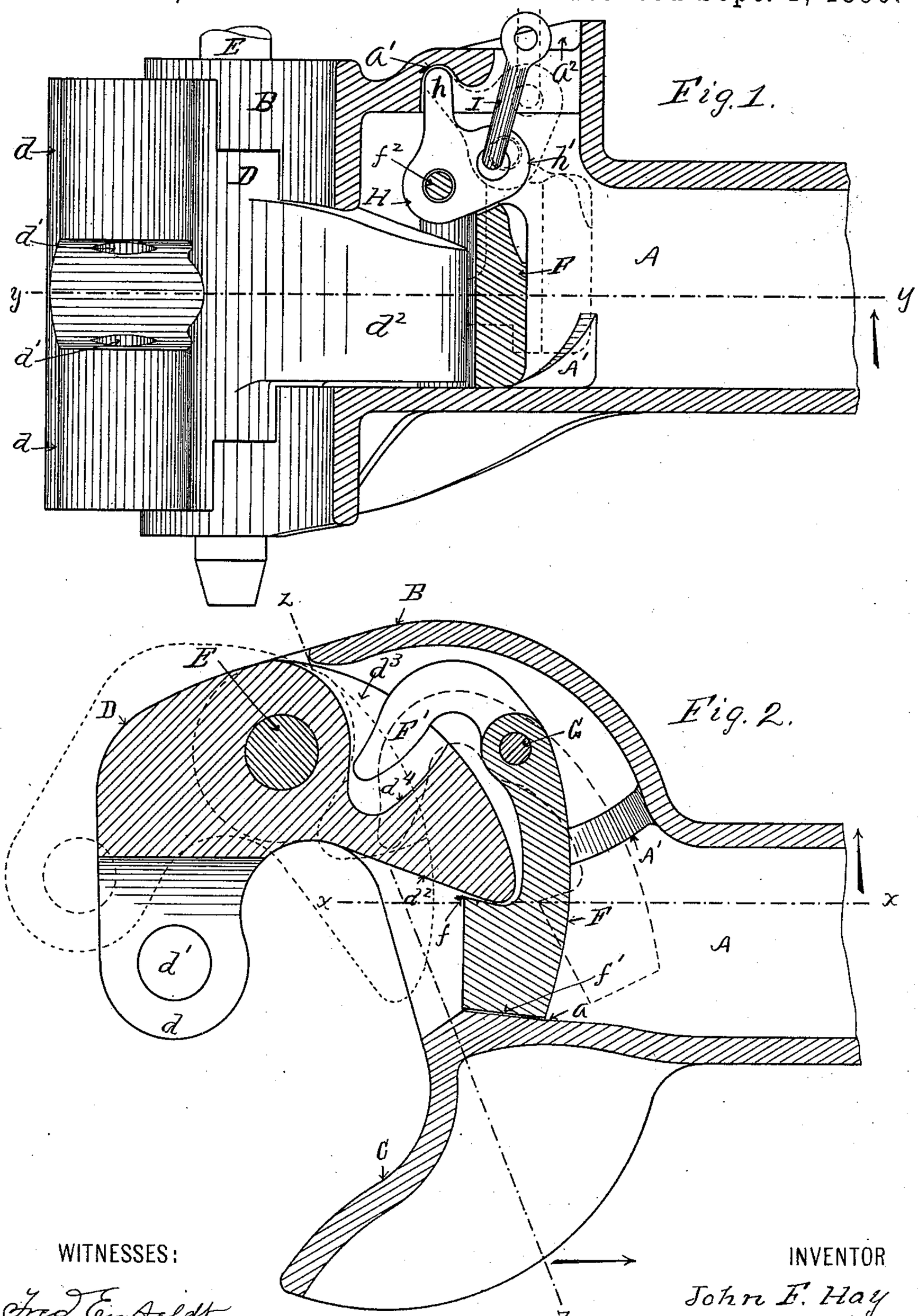

Fig. 1.

Fig. 2.

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Fig. 3.

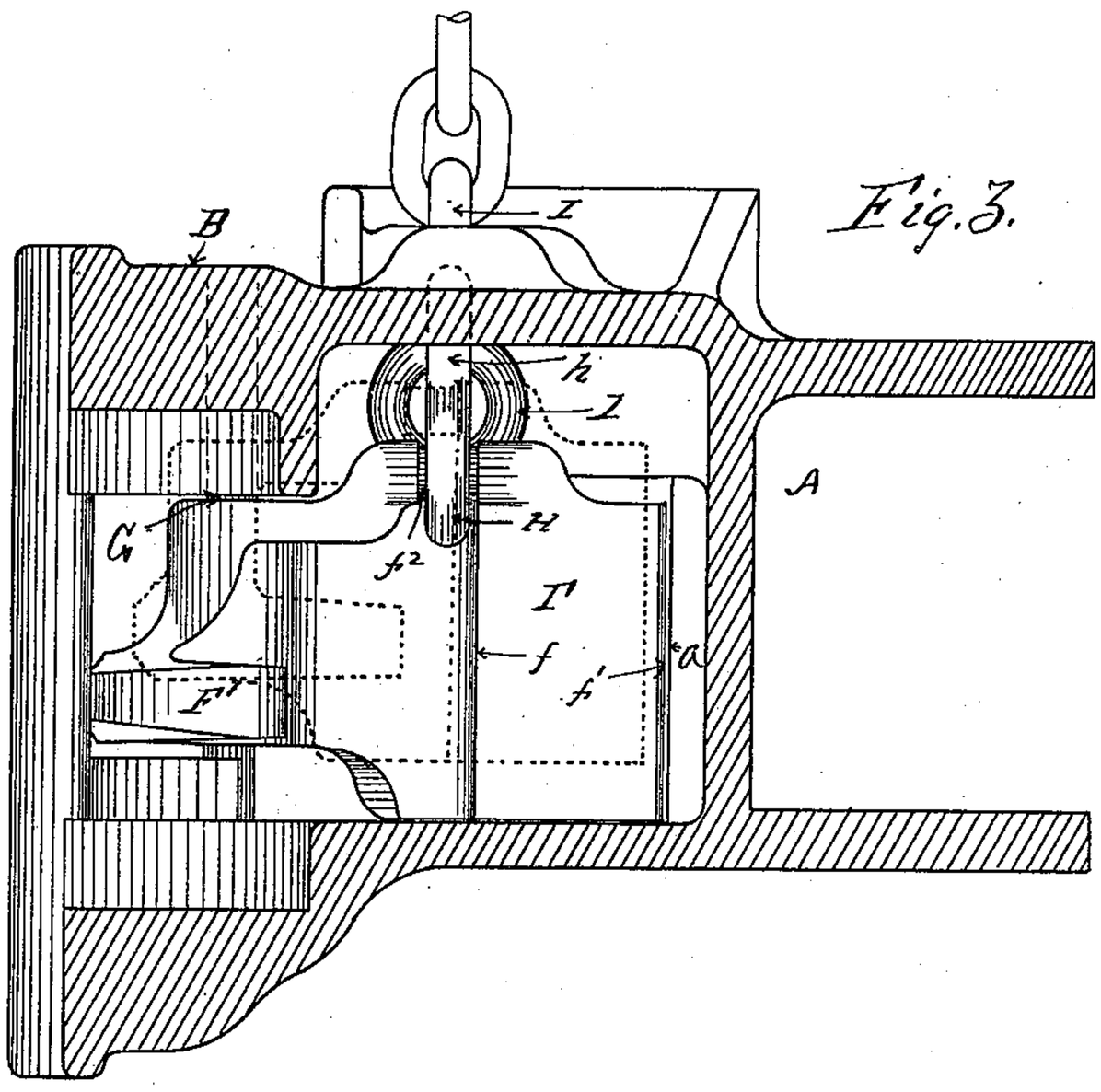
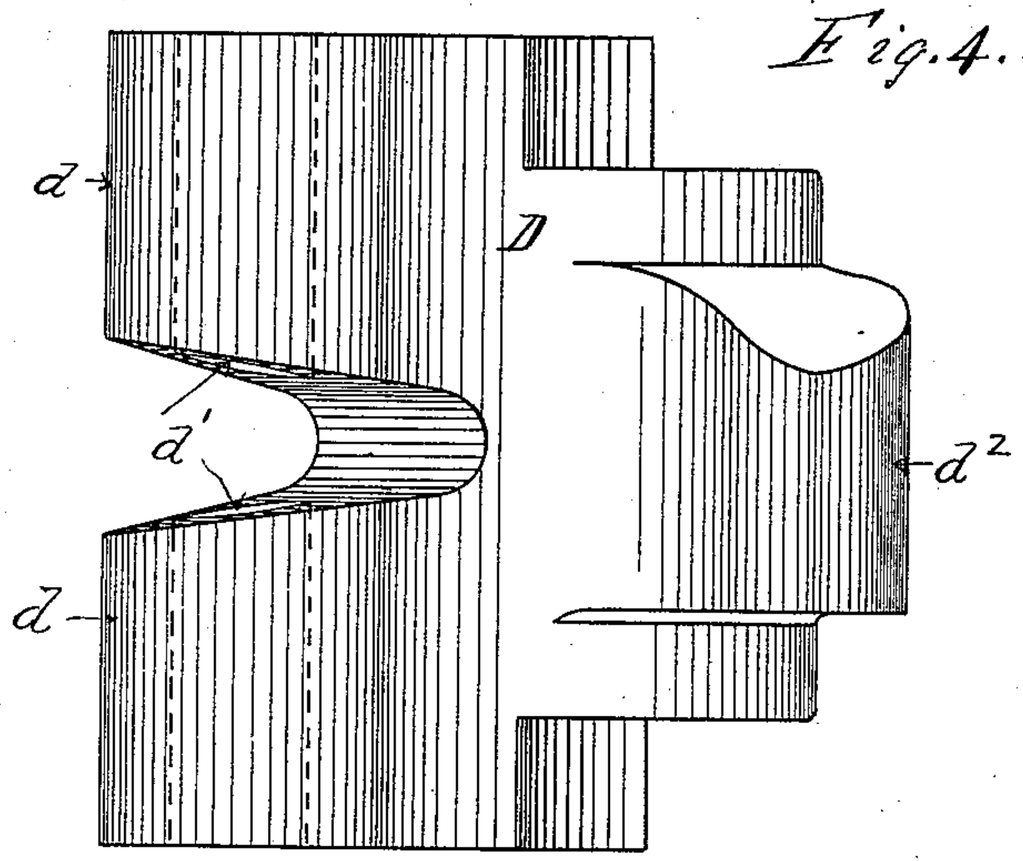


Fig. 4.



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UNITED STATES PATENT OFFICE.

JOHN F. HAY, OF ERIE, PENNSYLVANIA, ASSIGNOR TO THE ERIE MALLEABLE IRON COMPANY, LIMITED, OF SAME PLACE.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 566,907, dated September 1, 1896.

Application filed June 22, 1896. Serial No. 596,405. (No model.)

To all whom it may concern:

Be it known that I, JOHN F. HAY, a citizen of the United States, residing at the city of Erie, in the county of Erie and State of Pennsylvania, have invented certain new and useful Improvements in Car-Couplings; and I do hereby declare the following to be a full, clear, 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 of reference marked thereon, forming part of this specification.

This invention relates to that class of car-couplers in which the coupler-head is provided with a coupling-knuckle pivoted in the coupler-head so as to swing horizontally thereon in coupling with or uncoupling from a similar knuckle on the coupler of an opposite car; and it substantially consists in the improved mechanism illustrated in the accompanying drawings and hereinafter described for moving the swinging knuckle-lock back, so as to release the coupling-knuckle and automatically move it into position for recoupling by a continuous movement of the knuckle-lock.

In the drawings illustrating this invention, Figure 1 is a vertical section of a car-coupler embodying this invention on the line $x\,x$ in Fig. 2, looking in the direction of the arrow. Fig. 2 is a horizontal section of the same on the line $y\,y$ in Fig. 1, looking in the direction of the arrow. Fig. 3 is a vertical section of the same with the coupling-knuckle removed on the line $z\,z$ in Fig. 2, looking in the direction of the arrow. Fig. 4 is a view in elevation of the coupling-knuckle detached from the coupler-head.

In the drawings, A represents a coupler-head, which in its general features may be of the usual type, and has two jaws B and C. It is provided with an internal cavity or recess extending laterally into the jaw B, adapted to receive and permit a coupling-knuckle D to swing laterally upon a pivot-pin E, passing through registering holes in the outer end of the jaw B and through the knuckle D. This knuckle has an outer arm d, preferably bifurcated or slotted and provided with a coupling-pin hole d'. The knuckle D also has an inner arm d^2 nearly at right angles to the arm d thereof, having a recess or slot d^3 in the rear side thereof.

In the recess in the coupler-head A at the rear of the coupling-knuckle D there is a knuckle-lock F, pivoted on a vertical pin G, passing through registering holes in the rear of the jaw B of the coupler-head and through the knuckle-lock F, which swings freely and also moves vertically thereon. This knuckle-lock F has a shoulder f on the outer face thereof, adapted to engage the inner end of the arm d^2 of the coupling-knuckle D, and is of such length that when the coupling is locked the outer end f' thereof contacts with the inner wall a of the coupler-head A at the rear of the jaw C thereof, as illustrated in Fig. 2. On the opposite end of the knuckle-lock F there is a forwardly-curved arm F', which extends into the recess d^3 in the rear side of the arm d^2 of the coupling-knuckle D and engages the arm d as soon as the knuckle-lock F is moved back far enough to disengage the shoulder f thereon from the end of the arm d^2 and moves the arm d^2 forward, so as to swing the coupling-knuckle open, as illustrated by the dotted lines in Fig. 2.

In the top of the knuckle-lock F, adjacent to the shoulder f thereon, is a longitudinal pivot or pin f^2, upon which is pivoted a bell-crank lever H, one arm, h, of which extends upward into a recess a' in the top of the coupler-head, and the other arm, h', thereof extends approximately at right angles to the arm h toward the rear of the coupler-head, and is provided with a link I, which extends up through an opening a^2 in the top of the coupler-head directly in the rear of the recess a' therein, and is adapted to connect with a chain or other convenient mechanism (not shown) for raising the arm h' of the bell-crank lever H and the knuckle-lock F, as illustrated by the dotted lines in Figs. 1 and 3. In the bottom of the coupler-head A there is a vertical rib or projection A', extending from the rear wall of the coupler-head forward at a gradual downward curve until it meets the bottom of the coupler-head under the central part of the knuckle-lock F, as illustrated in Figs. 1 and 2.

In operation the bell-crank lever H acts

first to move the end f' of the knuckle-lock F directly backward, raising the knuckle-lock but slightly until the shoulder f thereon is disengaged from the end of the arm d^2 of the coupling-knuckle. At this time the curved arm F', on the opposite end of the knuckle-lock F, engages the wall d^4 of the recess d^3 in the arm d^2 of the coupling-knuckle, and as the knuckle-lock F is further acted upon by the bell-crank lever H the knuckle-lock F carries the curved arm F' thereon around and moves the arm d^2 of the coupling-knuckle forward and outward into the position illustrated by the dotted lines in Fig. 2. This movement of the knuckle-lock F is caused by the pivoting of the upper end of the arm h of the bell-crank lever H within the recess a' in the upper part of the coupler-head, which arm h in its normal position stands perpendicular over the knuckle-lock F, and prevents its being raised up vertically until it has been moved back, the end of the arm h operating in the socket or recess a' as a hinge, on which the bell-crank lever H and the knuckle-lock F turns, as illustrated in dotted lines in Fig. 1, and the rib A' being curved on its upper surface, the knuckle-lock F when released travels downward thereon in the arc of a circle described thereby by gravity to its normal position.

It will be observed that in its travel backward and upward the knuckle-lock F has two movements, one directly backward and the other both backward and vertical, which movements are actuated by said bell-crank lever, and are substantially one continuous operation, culminating in completely opening and throwing back the coupling-knuckle into position for recoupling, and after this is accomplished and the knuckle-lock is released it drops back by gravity to its normal position, the coupling-knuckle and knuckle-lock being then in position to operate automatically in coupling with a companion coupling brought into contact therewith without further manual manipulation.

In the drawings and foregoing description of my invention I have shown and described convenient mechanism for utilizing my invention. I am aware, however, that modifications thereof may be made without departing from the spirit of my invention. Therefore

What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a car-coupler, the combination of a coupler-head, a coupling-knuckle pivoted in one of the jaws of the coupler-head, a knuckle-lock pivoted in the coupler-head, a bell-crank lever having its fulcrum pivoted to said knuckle-lock, and one arm thereof pivoted on the coupler-head, and means connected with the other arm of said bell-crank lever for operating it, substantially as and for the purpose set forth.

2. In a car-coupler comprising substantially a coupler-head, a coupling-knuckle pivoted on a vertical pin in one of the jaws thereof, the combination of a knuckle-lock adapted to engage an arm on the coupling-knuckle, a bell-crank lever pivoted on said knuckle-lock, one arm of which extends vertically upward and is pivoted in the upper part of the coupler-head, and the other rearwardly, substantially as and for the purpose set forth.

3. In a car-coupler, the combination of a coupler-head, a horizontally-swinging coupling-knuckle, having an outer and inner arm pivoted in one of the jaws of the coupler-head, a knuckle-lock pivoted on a vertical pin in the coupler-head, a curved arm on the knuckle-lock adapted to engage the inner arm of the coupling-knuckle as the knuckle-lock moves backward, a bell-crank lever pivoted in the knuckle-lock, one arm of which extends upward into a recess in the upper part of the coupling-head and the other arm backward, and link-and-chain mechanism connected with said backwardly-extending arm, substantially as and for the purpose set forth.

4. In a car-coupler, the combination of a coupler-head provided with an internal cavity or recess, a vertical rib on the bottom of the rear part of said cavity or recess, having its upper surface at an inclination curving upward from the bottom of said recess to the rear wall thereof, a coupling-knuckle having outer and inner arms, the inner one of which has a slot or recess in the rear face thereof, pivoted in one of the jaws of the coupler-head, a knuckle-lock pivoted on a vertical pin in the coupler-head at the rear of the coupling-knuckle and adapted to swing backward and move upward over said inclined curved rib in the bottom of the coupler-head, a curved arm on said knuckle-lock entering the slot or recess in the rear face of the inner arm of the coupling-knuckle and adapted to engage same as the knuckle-lock is moved backward and upward over said inclined rib, a bell-crank lever pivoted to the upper part of the knuckle-lock, one arm of which extends vertically upward into a recess in the inner surface of the coupler-head when the knuckle-lock is in its normal position, and the other arm of said lever extending rearwardly, and link-and-chain mechanism connected with said rearwardly-extending arm, substantially as and for the purpose set forth.

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

JOHN F. HAY.

Witnesses:
B. J. WALKER,
H. E. FISH.