No. 725,150. PATENTED APR. 14, 1903.

W. S. SCHROEDER & A. P. LINDHOLM.

CAR COUPLING.

APPLICATION FILED JUNE 26, 1902.

NO MODEL. 2 SHEETS—SHEET 1.

Fig. 1

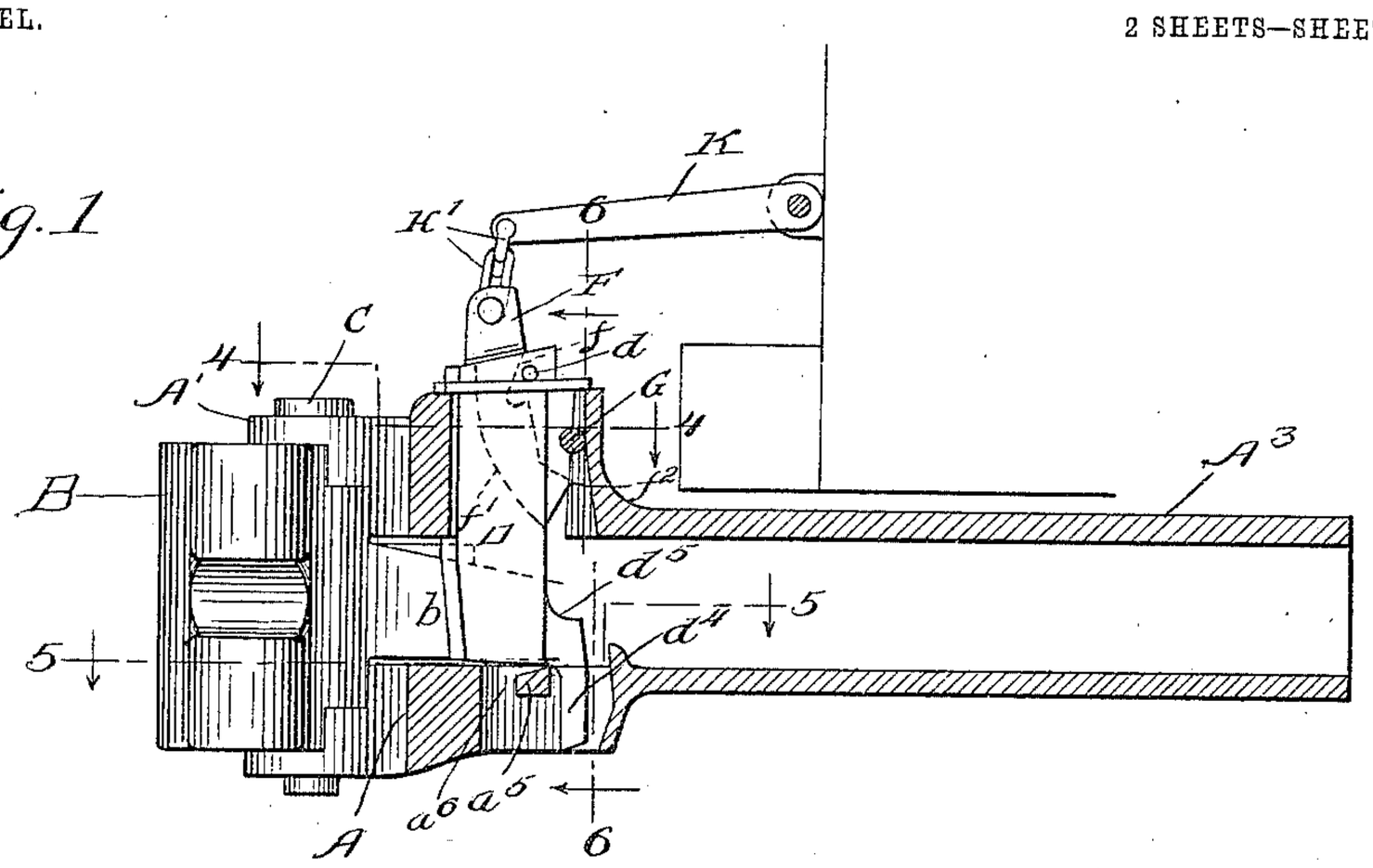


Fig. 2

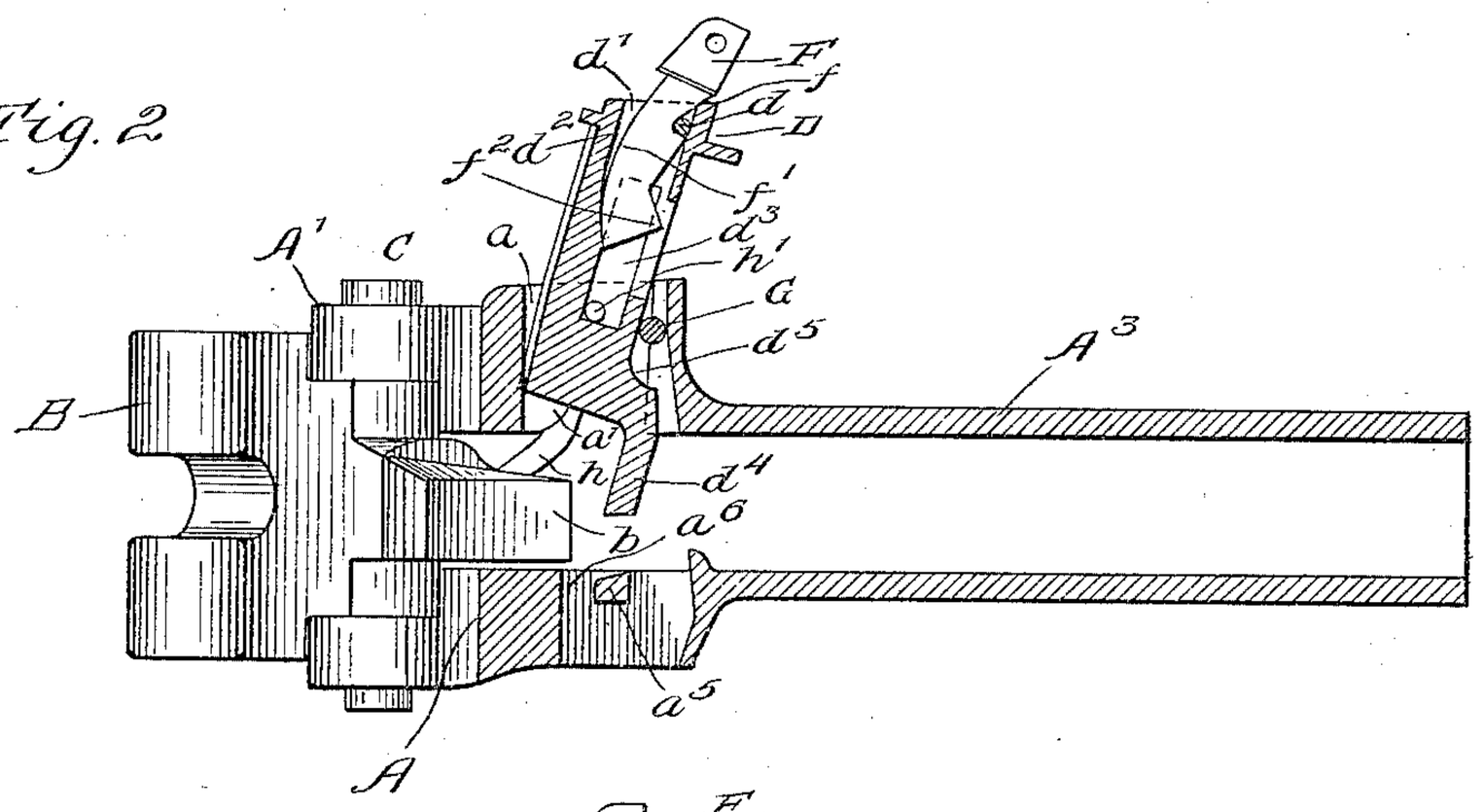
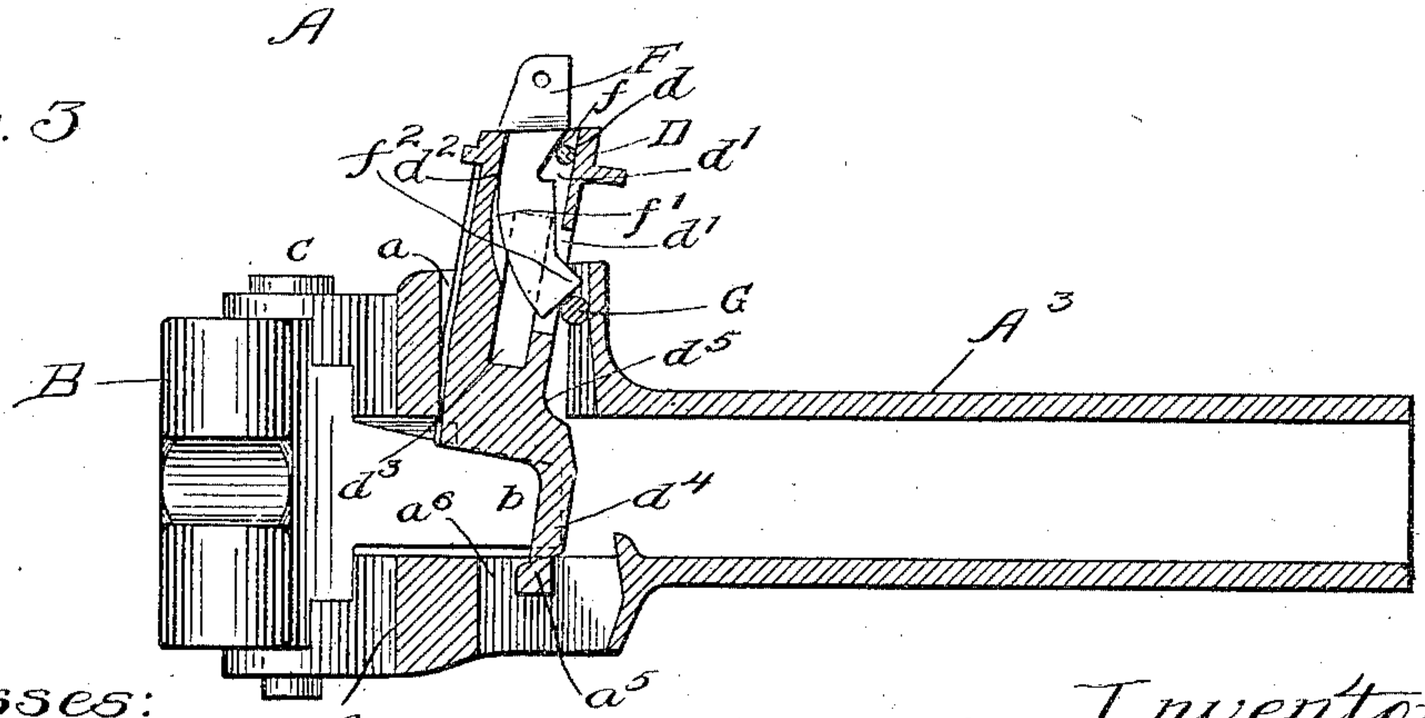


Fig. 3



Witnesses:
Wm. Geiger
F. D. Munday.

Inventors:
William S. Schroeder
Andrew P. Lindholm
By Munday Evarts & Adcock.
Attorneys

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NO MODEL. 2 SHEETS—SHEET 2.

Fig. 4

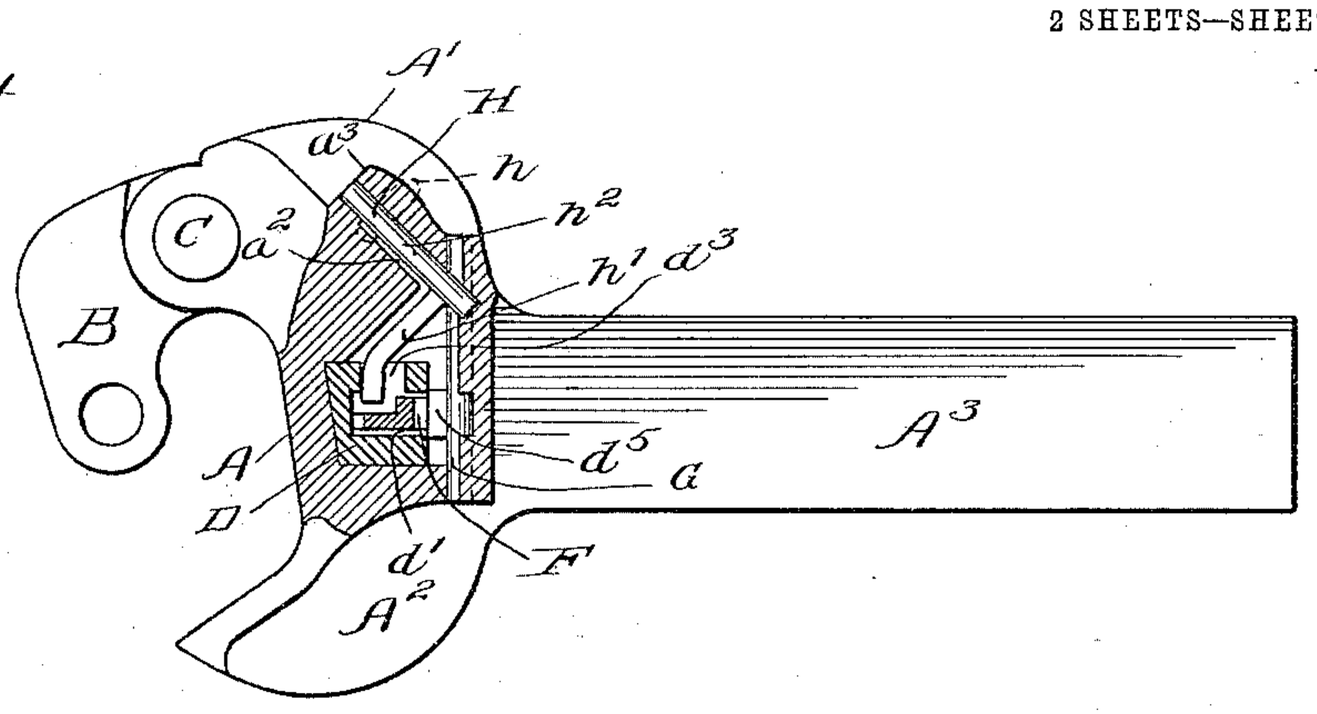


Fig. 5

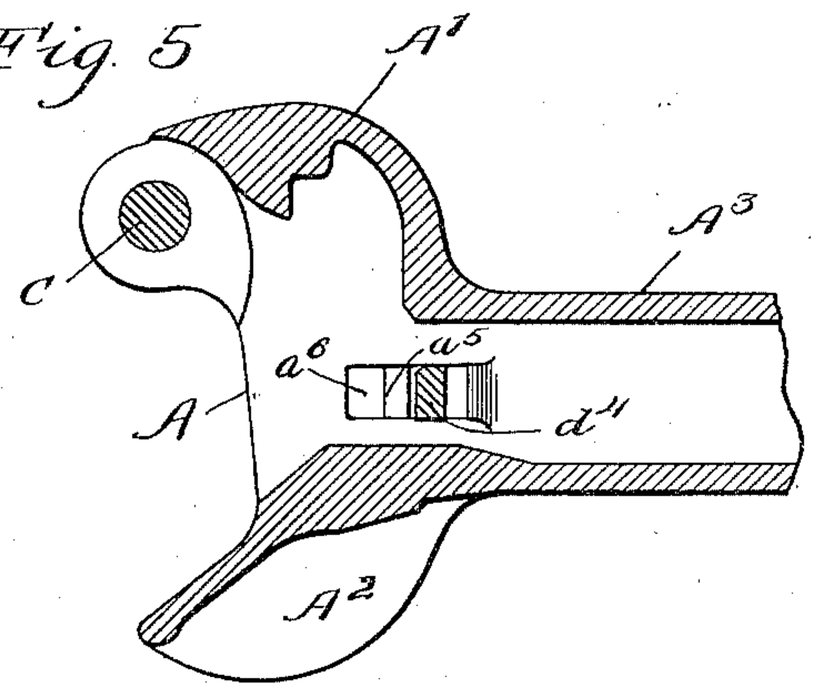


Fig. 6

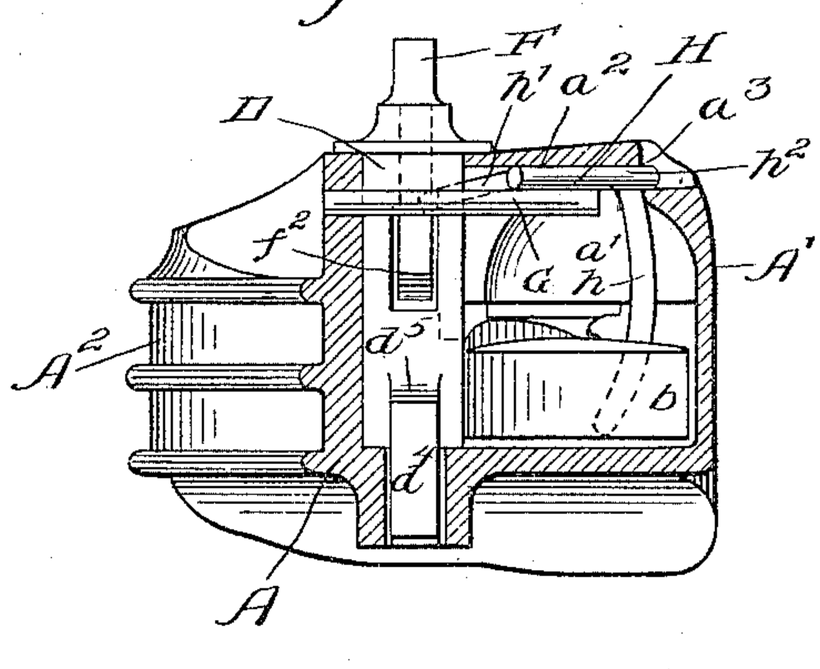


Fig. 7

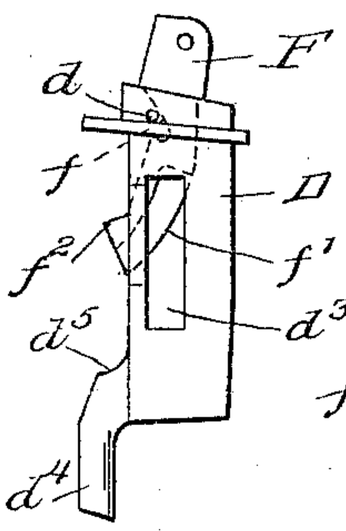


Fig. 8

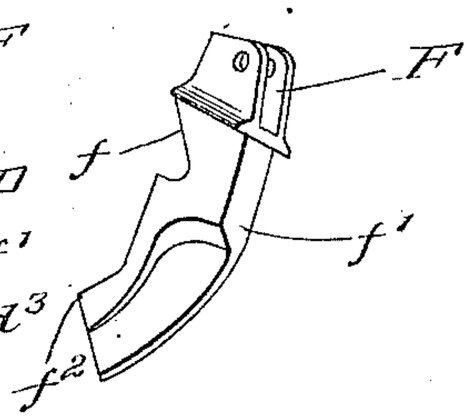
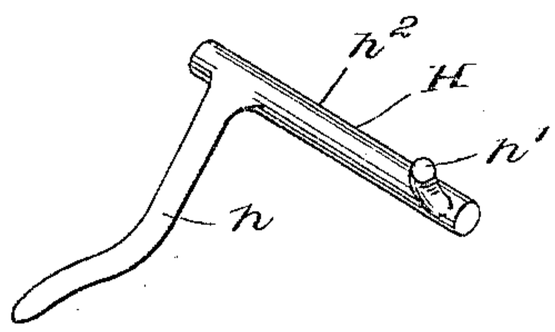


Fig. 9



Witnesses:

Wm. Geiger

H. D. Munday, Jr.

Inventors:

William S. Schroeder

Andrew P. Lindholm

By Munday, Evarts & Adcock,

Attorneys

UNITED STATES PATENT OFFICE.

WILLIAM S. SCHROEDER AND ANDREW P. LINDHOLM, OF CHICAGO, ILLINOIS.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 725,150, dated April 14, 1903.

Application filed June 26, 1902. Serial No. 113,208. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM S. SCHROEDER and ANDREW P. LINDHOLM, citizens of the United States, residing in Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Car-Couplers, of which the following is a specification.

Our invention relates to car-couplers.

The object of our invention is to provide a car-coupler of a simple, efficient, strong, and durable construction, which will operate to automatically open the knuckle when the lock is lifted, which may be readily set to uncouple, and in which also the lock is prevented from creeping or moving upward except when the same is being lifted by the operating-lever.

Our invention consists in the means we employ to accomplish this object or result—that is to say, it consists, in connection with a Master Car-Builders' forked draw-head, a pivoted knuckle, and a vertically-moving gravity locking-pin, of a knuckle-throwing lever fitting in a cavity formed in the upper portion of the pivot-arm of the draw-head and having a depending arm fitting behind and engaging the tail of the knuckle and a bent arm fitting in a vertical slot in the locking-pin, so that when the locking-pin is raised sufficiently to release the knuckle its further upward movement will operate the knuckle-throwing lever and open the knuckle.

It also consists, in connection with these parts, in providing the draw-head with a removable transverse pin to support the knuckle-throwing lever in position and permit its ready removal and insertion.

It also consists in providing the vertically-movable locking-pin with a shoulder on its rear side, which engages the before-mentioned transverse pin and prevents the locking-pin from being entirely removed from the draw-head by the upward movement of the lifting-lever.

It further consists, in connection with these parts, in providing the locking-pin with a swinging lifting-piece fitting in a slot or chamber in the locking-pin, which engages the transverse pin in the draw-head and prevents the lock from accidentally creeping or moving upward, except when it is lifted by the swinging lifting-piece, which tilts out of the way of the transverse pin when the lock is lifted by the operating-lever acting upon the swinging lifting-piece.

It further consists, in connection with these parts, in providing the locking-pin at its rear side with an extension which engages a horizontal rib in the floor of the draw-head and serves as a lock-set to hold the lock in position for uncoupling when the cars subsequently separate.

It also consists in the novel construction of parts and devices and the novel combinations of parts and devices herein shown and described.

In the accompanying drawings, forming a part of this specification, Figures 1, 2, and 3 are central vertical longitudinal sections of a car-coupler embodying our invention, showing the locking-pin in different positions. Figs. 4 and 5 are detail horizontal sections on lines 4 4 and 5 5, respectively, of Fig. 1. Fig. 6 is a cross-section on line 6 6 of Fig. 1. Fig. 7 is a detail view of the locking-pin. Fig. 8 is a detail perspective view of the swinging lifting-piece, and Fig. 9 is a detail perspective view of the knuckle-throwing lever.

A represents the forked draw-head of an ordinary Master Car-Builders' coupler, the same having a pivot-arm A′, a guard-arm A^2, and draw-bar A^3.

B is the knuckle, and C the pivot-pin by which the knuckle is pivoted to the draw-head.

D is the vertically-sliding gravity locking-pin, which works up and down in a suitable passage-way *a* in the draw-head.

F is the swinging lifting-piece, the same being pivotally and slidingly connected to the locking-pin by an inclined notch *f* in the lifting-piece and a transverse pin *d* in the locking-pin. The swinging lifting-piece fits in a vertical slot or chamber *d′* in the locking-pin. The lifting-piece F has a curved or cam-shaped face *f′*, which engages a curved or inclined face d^2 in the recess or chamber of the locking-pin and serves to normally throw the tail or projection f^2 of the lifting-piece into engagement with the transverse pin G, which is removably inserted in the

draw-head across the rear edge of the passage-way *a*, in which the lock fits, so as to thus prevent the lock from accidentally creeping or moving upward except when it is lifted by the lifting-piece, which action tilts or swings the tail or projection f^2 of the lifting-piece free or clear of the removable stop-pin G in the draw-head, thus permitting the lock to be freely lifted by the lifting-lever K.

H is a knuckle-throwing lever, the same having a depending arm *h*, which fits behind the tail *b* of the knuckle B, and an arm *h'*, which fits in a vertical slot d^3 in the lock D, so that when the lock is lifted sufficiently to cause its lower end to clear the tail of the knuckle, and thus permit the knuckle to open, the further upward movement of the locking-pin will operate the knuckle-throwing lever and automatically open the knuckle. The pivot-arm of the draw-head is provided in its upper portion with a cavity *a'* to receive the bell-crank knuckle-throwing lever H, said cavity terminating at its upper extremity in a channel or groove a^2 and socket a^3 to receive the shaft or pivot portion h^2 of the bell-crank knuckle-throwing lever and form a bearing therefor, the knuckle-throwing lever being supported in its bearing groove or channel by the removable transverse pin G, inserted in the draw-head and extending across said groove or channel. This permits the knuckle-throwing lever to be readily inserted in position and removed or replaced. The chamber or cavity *a'* in the pivot-arm of the draw-head gives room for the necessary movement of the knuckle-throwing lever to operate or automatically open the knuckle. As the arm *h* of the knuckle-throwing lever is a depending arm, it naturally returns to position by its own gravity.

The lower web or floor of the draw-head is provided with an integral rib a^5 for the lock-set leg d^4, projecting downwardly from the rear side of the locking-pin to engage or rest upon in order to set the locking-pin in position for uncoupling when the cars subsequently separate. The opening a^6 through the lower web or floor of the draw-head in front of this lock-set rib a^5 prevents snow, ice, or dirt from collecting beneath the locking-pin, and thus preventing the locking-pin from properly seating itself.

The operating-lever K is of the usual form and is connected to the lifting-piece F of the locking-pin D by connecting-links K'.

The lock-set leg d^4, projecting downwardly from the rear face of the locking-pin, also forms at its upper portion a shoulder d^5, which engages the removable transverse pin G in the draw-head, and thus prevents the lock from being entirely removed from the draw-head. The transverse pin G thus in the preferred construction of our invention serves three functions—as a stop to prevent the complete removal of the lock, as a stop to prevent the acidental upward movement of the lock from its locked position by reason of the engagement therewith of the tail of the lifting-piece, and, finally, as a support for the shaft or pivot portion of the bell-crank knuckle-throwing lever.

We claim—

1. In a car-coupler, the combination with a forked draw-head, a pivoted knuckle and a vertically-moving gravity locking-pin, of a bell-crank knuckle-throwing lever fitting in a cavity formed in the upper portion of the pivot-arm of the draw-head and having a depending arm fitting behind and engaging the tail of the knuckle, and a second arm fitting in a vertical slot in the locking-pin, a removable transverse pin supporting the knuckle-throwing lever in position, a swinging lifting-piece having a pivotal sliding connection with the locking-pin and provided with a tail or projection engaging said transverse pin in the draw-head to prevent the lock from accidentally creeping or moving upward except when lifted by the lifting-piece, said locking-pin being provided with a lock-setting leg projecting downwardly from its rear side and engaging a rib in the lower web or floor of the draw-head, substantially as specified.

2. In a car-coupler, the combination with a forked draw-head, of a knuckle, a vertically-moving gravity locking-pin and a swinging lifting-piece having a sliding and pivotal connection with the locking-pin and provided with a tail or projection adapted to engage a stop on the draw-head and prevent the lock from moving upward except when it is lifted by the lifting-piece, said draw-head being provided with a removable transverse pin extending across the same at the rear of the locking-pin to serve as a stop for engagement with the tail or projection of the lifting-piece, substantially as specified.

3. In a car-coupler, the combination with a forked draw-head, of a knuckle, a vertically-moving gravity locking-pin and a swinging lifting-piece having a sliding and pivotal connection with the locking-pin and provided with a tail or projection adapted to engage a stop on the draw-head and prevent the lock from moving upward except when it is lifted by the lifting-piece, said locking-pin having a vertical slot or recess therein to receive the lifting-piece and the lifting-piece being provided with an inclined notch and the locking-pin with a removable transverse pin to form the sliding and pivotal connection between the two, substantially as specified.

4. In a car-coupler, the combination with a forked draw-head, of a knuckle, a vertically-moving gravity locking-pin and a swinging lifting-piece having a sliding and pivotal connection with the locking-pin and provided with a tail or projection adapted to engage a stop on the draw-head and prevent the lock from moving upward except when it is lifted by the lifting-piece, said locking-pin having a curved or inclined face and said lifting-piece having a curved or inclined face to cause

the tail or projection of the lifting-piece to normally remain in engagement with the stop on the draw-head, substantially as specified.

5. In a car-coupler, the combination with a forked draw-head, of a knuckle, a vertically-moving gravity locking-pin and a swinging lifting-piece having a sliding and pivotal connection with the locking-pin and provided with a tail or projection adapted to engage a stop on the draw-head and prevent the lock from moving upward except when it is lifted by the lifting-piece, said draw-head being provided with a removable transverse pin extending across the same at the rear of the locking-pin to serve as a stop for engagement with the tail or projection of the lifting-piece, said locking-pin having a vertical slot or recess therein to receive the lifting-piece and the lifting-piece being provided with an inclined notch and the locking-pin with a removable transverse pin to form the sliding and pivotal connection between the two, substantially as specified.

6. In a car-coupler, the combination with a forked draw-head, of a knuckle, a vertically-sliding gravity locking-pin, a lifting-piece having a movable connection with the locking-pin and adapted to engage a stop on the draw-head to prevent the lock from moving upward except when it is lifted by the lifting-piece, a knuckle-throwing lever having one arm engaging the tail of the knuckle and another arm engaging the locking-pin, and a removable pin in the draw-head serving as a stop for engagement with the lifting-piece and as a support for the shaft or pivot portion of the knuckle-throwing lever, substantially as specified.

7. In a car-coupler, the combination with a forked draw-head, of a knuckle, a vertically-sliding gravity locking-pin, a lifting-piece having a movable connection with the locking-pin and adapted to engage a stop on the draw-head to prevent the lock from moving upward except when it is lifted by the lifting-piece, a knuckle-throwing lever, one arm engaging the tail of the knuckle and the other arm engaging the locking-pin, and a removable pin in the draw-head serving as a stop for engagement with the lifting-piece and as a support for the shaft or pivot portion of the knuckle-throwing lever, said locking-pin having also a lock-set leg projecting downwardly from its rear side and adapted also to engage said removable pin in the draw-head to prevent the locking-pin from being entirely removed, substantially as specified.

8. In a car-coupler, the combination with a forked draw-head, of a knuckle and a vertically-moving gravity locking-pin provided with a lock-set leg projecting downwardly from its rear side and forming a shoulder to prevent the lock from being entirely removed from the draw-head, said draw-head being provided with a removable pin extending across the rear face of the locking-pin to engage the shoulder formed by the lock-set leg on the locking-pin, substantially as specified.

9. In a car-coupler, the combination with a forked draw-head, of a knuckle and a vertically-moving gravity locking-pin provided with a lock-set leg projecting downwardly from its rear side and forming a shoulder to prevent the lock from being entirely removed from the draw-head, said draw-head being provided with a removable pin extending across the rear face of the locking-pin to engage the shoulder formed by the lock-set leg on the locking-pin, and a lifting-piece having a sliding and pivotal connection with the lock and provided with a tail or projection engaging said removable pin, substantially as specified.

WILLIAM S. SCHROEDER.
ANDREW P. LINDHOLM.

Witnesses:
H. M. MUNDAY,
EDMUND ADCOCK.