

UNITED STATES PATENT OFFICE.

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CAR-COUPLING.

No. 801,870.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, GUSTAF A. HERMANSON, a citizen 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.

My invention relates to improvements in car-couplers of the Master Car-Builders' type and having a forked draw-head, pivoted knuckle, and gravity-lock.

The object of my invention is to provide a car-coupler of a simple, strong, efficient, and durable construction, having means for setting the lock in position for coupling and uncoupling and a knuckle-thrower or device for automatically swinging or throwing the knuckle open.

My invention consists, in connection with a forked draw-head and its hollow or chambered draw-bar, pivoted knuckle, and vertically-movable gravity locking-pin, furnished with a lock-set ledge or shoulder, of a horizontally-sliding knuckle-thrower mounted to reciprocate in the chamber of the draw-bar and adapted to engage a cam or curved face on the tail or rear arm of the knuckle, and thus operate to throw the knuckle open when the locking-pin is lifted to the required extent, and provided with a lock-set extension or arm adapted for engagement with the lock-set ledge or shoulder on the locking-pin when said locking-pin is raised to the required extent to permit the knuckle to swing open and a flexible connection between the horizontally-sliding knuckle-thrower and the locking-pin, so that when the locking-pin is lifted to the required extent the knuckle-thrower will engage the tail or rear arm of the knuckle and cause the knuckle to be automatically opened.

My invention also consists in the novel construction of parts and devices and in the novel combinations of parts and devices herein shown or described.

In the accompanying drawings, forming a part of this specification, Figure 1 is a central vertical longitudinal section of a car-coupler embodying my invention. Fig. 2 is a similar view showing the locking-pin in its raised position and the knuckle thrown open by the horizontally-sliding knuckle-thrower. Fig. 3 is a horizontal section on the broken line 3-3 of Fig. 1. Fig. 4 is a vertical cross-section

on line 4-4 of Fig. 1, and Fig. 5 is a partial plan view showing the opening in the draw-bar for the locking-pin and the notch or recess to accommodate the chain or flexible connection extending from the locking-pin to the knuckle-thrower. Fig. 6 is a detail front view of the knuckle-thrower.

In the drawings, A represents the forked draw-head of a car-coupler having the customary pivot-arm *a*, guard-arm *a'*, and integral draw-bar *A'* furnished with the usual hollow chamber *A²* therein.

B is the knuckle, pivotally connected to the draw-head by the pivot-pin C and having the usual front arm *b* and rear arm or tail *b'*, which is preferably furnished with the customary safety-hook *b²*, adapted to engage the corresponding hook or projection *a²* of the draw-head. The rear arm or tail *b'* of the knuckle is also furnished with a curved rear face or cam *b³* for engagement with the horizontally-sliding knuckle-thrower F, which is mounted to reciprocate in the chamber *A²* of the draw-bar *A'*.

D is the vertically-movable gravity locking-pin, the same being furnished with a lock-set leg *d* at its lower end, having a lock-set ledge or shoulder *d'* at its side adapted to engage a lock-set arm *f* on the horizontally-sliding knuckle-thrower F. The bottom web or floor *a⁵* of the draw-head is furnished with an opening *a⁶*, through which the lock-set leg *d* extends.

The horizontally-sliding knuckle-thrower F reciprocates longitudinally in the chamber *A²* of the draw-bar *A'* and is connected by a flexible connection G, preferably a chain, with the locking-pin D, so that when the lock is lifted beyond the extent necessary to unlock the knuckle or permit it to swing open the knuckle F will be reciprocated forward into engagement with the cam or curved rear face *b³* of the knuckle-tail, and thus throw the knuckle open. The knuckle-thrower F is furnished, preferably, with a slightly rounded or inclined nose *f²* to engage the knuckle-tail, so that when the cars are coupled and the knuckle swings into its closed position it will operate to push the knuckle-thrower back to its normal position. The knuckle-thrower F is provided with a notch *f'* to receive and accommodate the lock D or its lock-set leg *d* when the knuckle-thrower is in its forward or advanced

position, and the lock-set arm f of the knuckle-thrower F is furnished with a lock-set ledge or shoulder f^2 to engage the lock-set ledge or shoulder d' on the lock-set leg d of the locking-pin D. The flexible connection G is attached at its lower end to a bracket or arm f^4 on the horizontally-sliding knuckle-thrower F and extends around a curved shoulder or guide a^7 , which is provided on the draw-head for this purpose, this guide groove or channel a^7 extending to the top face of the draw-head, as indicated in Figs. 1, 2, and 5. The flexible connection G is attached at its upper end to the locking-pin D by a pin g , the locking-pin being provided with a groove or channel d^2 to receive the chain G. The locking-pin D is provided with an ear d^3 , located to one side of its center, so that when the locking-pin is lifted by the clevis H and arm h of the operating-lever H' the lock will tilt laterally or to one side, and thus cause its lock-set ledge or shoulder d' to properly engage the lock-set arm f and lock-set ledge f^2 on the knuckle-thrower F, and thus set the locking-pin D in position for uncoupling. Owing to the fact that the lifting ear or connection of the locking-pin is a lateral one or to one side of the center, the strain of the operating-lever and clevis on the lock will cause the lock to tilt to one side, and thus insure the engagement of its lock-set ledge or shoulder with the lock-set arm and ledge on the horizontally-sliding knuckle-thrower.

When the cars are coupled together and the knuckles of two connecting-couplers are closed, so that the lifting of the lock to uncouple the cars cannot cause the knuckle-thrower to swing the knuckle open, and it is desired to lift the lock to uncoupling position and set it in that position, so that the cars can be subsequently separated and the knuckle swung open, it will be understood that the tail of the closed knuckle engaging the knuckle-thrower prevents the knuckle-thrower from sliding farther forward; but the strain of the operating-lever H' on the lock D and of the flexible connection G on the lock causes the lower end of the lock or its lock-set leg d to be positively tilted sidewise or laterally into position for the proper engagement of its lock-set ledge d' with the lock-set ledge f^2 on the lock-set arm f of the horizontally-sliding knuckle-thrower F by reason of the locking-pin having a lateral lifting-ear or one located to one side of its center.

I claim—

1. In a car-coupler, the combination with the draw-head and its hollow or chambered draw-bar, of a knuckle having a cam or curved face on its tail or rear arm, a vertically-movable locking-pin having a lock-set ledge on its side, a horizontally-sliding knuckle-thrower mounted in the chamber of the draw-bar having a lock-set arm, a lock-set ledge adapted to be engaged by the lock-set ledge on the side of the lock-

ing-pin, and a flexible connection between the locking-pin and the sliding knuckle-thrower, substantially as specified.

2. In a car-coupler, the combination with the draw-head and its hollow or chambered draw-bar, of a knuckle having a cam or curved face on its tail or rear arm, a vertically-movable locking-pin having a lock-set ledge on its side, a horizontally-sliding knuckle-thrower mounted in the chamber of the draw-bar and having a lock-set arm and a lock-set ledge adapted to be engaged by the lock-set ledge on the side of the locking-pin, and a flexible connection between the locking-pin and the sliding knuckle-thrower, said locking-pin having a lifting-ear located to one side of its center to cause the lock to tilt laterally to engage said lock-set arm and ledge on the knuckle-thrower, substantially as specified.

3. In a car-coupler, the combination with the draw-head and draw-bar, of a knuckle, a vertically-movable locking-pin having a lock-set ledge or shoulder, a horizontally-sliding knuckle-thrower mounted in the chamber of the draw-bar and adapted to engage the tail or rear arm of the knuckle and to be engaged by the lock-set ledge or shoulder of the locking-pin, and a flexible connection between the locking-pin and the sliding knuckle-thrower, substantially as specified.

4. In a car-coupler, the combination with the draw-head and chambered draw-bar, of a knuckle, a locking-pin, a horizontally-sliding knuckle-thrower reciprocating in the chamber of the draw-bar, and a flexible connection between the locking-pin and the sliding knuckle-thrower, said locking-pin and knuckle-thrower having interengaging lock-set ledges, substantially as specified.

5. In a car-coupler, the combination with the draw-head and chambered draw-bar, of a knuckle, a locking-pin, a horizontally-sliding knuckle-thrower reciprocating in the chamber of the draw-bar, and a flexible connection between the locking-pin and the sliding knuckle-thrower, said locking-pin and knuckle-thrower having interengaging lock-set ledges, said lock-set ledge on the locking-pin being on one side thereof and said locking-pin having a lifting-ear at one side of its center to cause the lock to tilt laterally to insure engagement of its lock-set ledge with the knuckle-thrower, substantially as specified.

6. In a car-coupler, the combination with a draw-head and chambered draw-bar, of a knuckle, a locking-pin having a lock-set ledge or shoulder, a horizontally-sliding knuckle-thrower reciprocating in the chamber of the draw-bar, a flexible connection between the locking-pin and the sliding knuckle-thrower, said lock-set ledge on the locking-pin being adapted to engage said horizontally-sliding knuckle-thrower, substantially as specified.

7. In a car-coupler, the combination with the draw-head and draw-bar, of a knuckle having

a cam or curved face on its tail or rear arm,
of a horizontally-sliding knuckle-thrower
mounted in the chamber of the draw-bar, a
vertically-movable locking-pin having a lock-
5 set ledge adapted to engage a lock-set ledge
on the sliding knuckle-thrower, and a flexi-
ble connection between the locking-pin and

the sliding knuckle-thrower, substantially as
specified.

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Witnesses:

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EDMUND ADCOCK.