

UNITED STATES PATENT OFFICE.

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CAR-COUPLING.

No. 813,744.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WILLIAM S. SCHROEDER, 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 having the customary forked draw-head, pivoted knuckle, and gravity locking-pin.

The object of my invention is to provide an automatic car-coupler of a strong, simple, efficient, and durable construction having means for setting the lock in position for coupling and uncoupling and means for automatically throwing the knuckle open and in which the knuckle-throwing lever may be conveniently inserted and removed through the lock-opening in the top of the draw-head when required, the knuckle and locking-pin being first removed, in which the knuckle itself will prevent the entire removal or withdrawal of both the lock and the knuckle-thrower from the draw-head unless the knuckle itself is first removed and in which the weight of the locking-pin when in its closed position will itself hold the lower arm of the knuckle-thrower lever out of contact with the knuckle-tail, and so when the cars are coupled together and the train is in motion the knuckle-thrower will not tend to wear away and weaken the knuckle.

My invention consists in the means I employ to practically accomplish this object or result—that is to say, it consists, in combination with the draw-head, knuckle, and lock, of a knuckle-thrower having a depending arm adapted to engage the knuckle-tail to throw the knuckle open and an upper or horizontal arm fitting on top of or outside the draw-head and engaging the draw-head at one end as a fulcrum and adapted to engage a ledge or shoulder on the locking-pin when the lock is lifted to the required extent, and thus operate the knuckle-thrower to throw the knuckle open, the inner end of the upper or horizontal arm of the knuckle-thrower being also engaged by a ledge or shoulder on the lock when the lock is in its closed or lowermost position, so that the weight of the lock on this inner end of the upper or horizontal arm of the knuckle-thrower will also serve to hold the depending arm of the knuckle-thrower out of engagement with the knuckle-

tail, and thus preventing the knuckle-thrower wearing the knuckle-tail.

My invention also consists in the novel construction of parts and devices and in the novel combinations of parts and devices here- 60 in shown or described.

In the accompanying drawings, forming a part of this specification, Figure 1 is a central vertical longitudinal sectional view of a car-coupler embodying my invention. Fig. 2 is 65 a similar view showing the lock in its raised or lock-set position. Fig. 3 is a horizontal section on the broken line 3 3 of Fig. 1. Fig. 4 is a detail longitudinal section on the broken line 4 4 of Fig. 1. Fig. 5 is a vertical section on the broken line 5 5 of Fig. 3. Fig. 6 is a detail perspective view of the knuckle-thrower. Fig. 7 is a detail side elevation of the lock looking from the knuckle-throwing side of the same. Fig. 8 is a view similar to Fig. 5, showing the knuckle removed and the parts in a different position. 70 75

In the drawings, A represents the draw-head having the customary guard-arm *a* and pivot arms or ears *a'*; B, the knuckle; C, the 80 pivot-pin; D, the locking-pin; F, the knuckle-thrower, and G the lifting-lever, connected by a clevis *g* with the lifting-pin.

The draw-head A has an opening *a*² to receive the lock and at one side thereof a slot or notch *a*³ to receive the depending arm *f* of the knuckle-thrower and a guide-recess *a*⁴ in its upper face to receive the upper or horizontal arm *f'* of the knuckle-thrower, which fits outside the draw-head on top of the same. 85 90

The lock D has at its lower end a lock-set leg *d*, furnished with a lock-set shoulder *d'*, which engages the lower web or wall *a*³ of the draw-head and serves to set or hold the lock in position for uncoupling. The lock D also 95 has a lock-set ledge or shoulder *d*², adapted to support the lock on the tail of the knuckle when the knuckle is open, and thus set or hold the lock in position for coupling. The lock D is also furnished with a longitudinal notch or cut-away *d*³, preferably at the corner thereof and adjacent to the knuckle-thrower, to receive and accommodate the inner end *f*² of the upper or horizontal arm of the knuckle-thrower, which fits outside the draw-head. 100 105 The lock D is also provided with a ledge or shoulder *d*⁴, which engages the inner end *f*² of the upper or horizontal arm *f'* of the knuckle-thrower when the lock is lifted sufficiently to permit the knuckle to open, and 110

thus operates by the further lifting of the lock to operate the knuckle-thrower and causes the same to throw the knuckle open, the outer end f^3 of the upper or horizontal arm of the knuckle-thrower then turning on the upper face of the draw-head as a fulcrum. The lock D is also provided near its upper end with a ledge or shoulder d^2 , which engages the inner end f^2 of the upper or outside arm f' of the knuckle-thrower when the lock is in its lowermost position, so that the lock thus resting in part on the knuckle-thrower will serve to hold the lower or depending arm f of the knuckle-thrower out of engagement with the tail of the knuckle, and thereby prevent the two wearing each other when the train is in motion.

The knuckle-thrower is provided with a shoulder or projection f^4 , which fits under the lip a^6 of the draw-head and prevents, in connection with the lock D and knuckle B, either the knuckle-thrower itself or the lock D from being entirely removed from the draw-head unless the knuckle is itself first removed, as the normal opening of the knuckle-tail does not permit the knuckle-thrower to be sufficiently rocked or turned on its fulcrum to enable the inner end f^2 of the arm f' to permit the shoulder d^4 of the lock to pass said inner end f^2 . By first taking out the pivot-pin C and removing the knuckle the knuckle-thrower can be turned on its pivot or fulcrum sufficiently to permit the lock to be withdrawn and the knuckle-thrower itself also lifted out through the opening in the top of the draw-head, as shown in Fig. 8.

The knuckle B has the customary front arm or nose b and rear arm or tail b' , furnished with a hook or projection b^2 to engage the hook or projection a^7 on the draw-head when the knuckle is closed. The tail of the knuckle also has a notch or recess b^3 to receive or accommodate the lower end f^5 of the depending arm f of the knuckle-thrower when the knuckle is closed.

The draw-head is furnished with a vertical recess a^8 to receive the depending arm f of the knuckle-thrower and permit the same to swing as required in throwing the knuckle open. The horizontal recess a^4 in the upper face of the draw-head to receive and guide the upper horizontal arm f' of the knuckle-thrower should be as deep as the thickness of said arm, so that the upper face of the arm will be flush with the upper face of the draw-head surrounding the locking-pin opening pin therein.

The clevis g , which connects the lifting-lever with the locking-pin, is preferably provided with a toe or projection g' , which engages the top flange d^6 of the lock, and thus tends to tilt the lower end of the lock forward, so its lock-set leg or shoulder will prop-

erly engage the lock-set ledge a^5 on the draw-head when the lock is lifted.

I claim—

1. In a car-coupler, the combination of a draw-head, pivotal knuckle and locking-pin, with a knuckle-thrower having a depending arm to engage the knuckle-tail to throw the knuckle open, and an upper horizontal arm fitting outside the draw-head on top thereof, the lock having a shoulder engaging the inner end of said horizontal arm of the knuckle-thrower when the lock is lifted the required extent, the lock also having a shoulder near its upper end engaging the inner end of the outer horizontal arm of the knuckle-thrower when the lock is in its lowermost position to hold the depending arm of the knuckle-thrower free from the knuckle-tail, substantially as specified.

2. In a car-coupler, the combination of a draw-head, a pivotal knuckle and locking-pin, with a knuckle-thrower having a depending arm to engage the knuckle-tail to throw the knuckle open, and an upper horizontal arm fitting outside the draw-head on top thereof, the lock having a shoulder engaging the inner end of said horizontal arm of the knuckle-thrower when the lock is lifted the required extent, the lock also having a shoulder near its upper end engaging the inner end of the outer horizontal arm of the knuckle-thrower when the lock is in its lowermost position to hold the depending arm of the knuckle-thrower free from the knuckle-tail, the knuckle-thrower having a shoulder or projection fitting under a lip of the draw-head to prevent the knuckle-thrower being removed from the draw-head unless the knuckle is first removed, substantially as specified.

3. In a car-coupler, the combination with a draw-head, of a knuckle, a lock and a knuckle-thrower having an upper arm fitting outside of and resting upon the top of the draw-head, the lock having a longitudinal notch and shoulders engaging the inner end of said upper outside arm of the knuckle-thrower, substantially as specified.

4. In a car-coupler, the combination with a draw-head, of a knuckle, a lock and a knuckle-thrower having an upper arm fitting outside of and resting upon the top of the draw-head, the lock having a longitudinal notch and shoulders engaging the inner end of said upper outside arm of the knuckle-thrower, and the knuckle-thrower having a shoulder or projection fitting under the web or lip of the draw-head to prevent the removal of the knuckle-thrower unless the knuckle is first removed, substantially as specified.

5. In a car-coupler, the combination with a draw-head, of a knuckle, a lock, a knuckle-thrower having a depending arm engaging the knuckle-tail, and an arm fitting outside the draw-head on the top thereof, the lock

having a shoulder engaging the inner end of said last-mentioned arm when the lock is lifted to the required extent, the lock having also an upper shoulder engaging said inner end of said knuckle-thrower when the lock is in its lowermost position, substantially as specified.

6. In a car-coupler, the combination with a draw-head, of a knuckle, a lock, a knuckle-thrower having a depending arm engaging the knuckle-tail, and an arm fitting outside the draw-head on the top thereof, the lock having a shoulder engaging the inner end of said last-mentioned arm when the lock is lifted to the required extent, the lock also having an upper shoulder engaging said inner end of said knuckle-thrower arm when the lock is in its lowermost position, the knuckle-thrower being provided with a shoulder or projection fitting under a lip or web with which the draw-head is provided, substantially as specified.

7. In a car-coupler, the combination with a draw-head, of a knuckle, a lock, a knuckle-thrower having a depending arm engaging the knuckle-tail, and an arm fitting outside the draw-head on the top thereof, the lock having a shoulder engaging the inner end of said last-mentioned arm when the lock is lifted to the required extent, the lock also having an upper shoulder engaging said inner end of said knuckle-thrower arm when the lock is in its lowermost position, the knuckle-thrower being provided with a shoulder or projection fitting under a lip or web with which the draw-head is provided, the tail of the knuckle having a notch or recess to receive the lower end of the depending arm of the knuckle-thrower, substantially as specified.

8. In a car-coupler, the combination with a draw-head, of a knuckle, a locking-pin, having a lock-set leg and lock-set shoulder, and provided with a shoulder to engage a knuckle-thrower, of a knuckle-thrower having a depending arm to engage the knuckle-tail, and an upper arm fitting outside the draw-head and resting on the top thereof and engaged at its inner end by said knuckle-throwing shoulder on the locking-pin, substantially as specified.

9. In a car-coupler, the combination with a draw-head, of a knuckle, a locking-pin, hav-

ing a lock-set leg and lock-set shoulder and a shoulder to engage a knuckle-thrower, of a knuckle-thrower having a depending arm to engage the knuckle-tail, and an upper arm fitting outside the draw-head and resting on the top thereof and engaged at its inner end by said knuckle-throwing shoulder on the locking-pin, said locking-pin having also a second shoulder to engage said upper arm of the knuckle-thrower when the knuckle is closed, substantially as specified.

10. In a car-coupler, the combination with a draw-head, of a knuckle, a locking-pin, having a lock-set leg and lock-set shoulder, and a shoulder to engage a knuckle-thrower, of a knuckle-thrower having a depending arm to engage the knuckle-tail, and an upper arm fitting outside the draw-head and resting on the top thereof and engaged at its inner end by said knuckle-throwing shoulder on the locking-pin, said locking-pin having also a second shoulder to engage said upper arm of the knuckle-thrower when the knuckle is closed, and said knuckle-thrower having a shoulder or projection fitting under a lip on the draw-head to prevent the removal of the knuckle-thrower, substantially as specified.

11. In a car-coupler, the combination with a draw-head, of a knuckle, a locking-pin, having a lock-set leg and lock-set shoulder, and a shoulder to engage a knuckle-thrower, of a knuckle-thrower having a depending arm to engage the knuckle-tail, and an upper arm fitting outside the draw-head and resting on the top thereof and engaged at the inner end by said knuckle-throwing shoulder on the locking-pin, said locking-pin having also a second shoulder to engage said upper arm of the knuckle-thrower when the knuckle is closed, said knuckle-thrower having a shoulder or projection fitting under a lip on the draw-head to prevent the removal of the knuckle-thrower, the draw-head being provided on its upper face with a horizontal guide-face for the upper arm of the knuckle-thrower to permit the upper face of said arm to fit flush with the upper face of the draw-head surrounding the locking-pin opening therein, substantially as specified.

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Witnesses:

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