

W. S. SCHROEDER.
CAR COUPLING.
APPLICATION FILED SEPT. 4, 1907.

1,022,335.

Patented Apr. 2, 1912.

2 SHEETS-SHEET 1.

Fig. 1

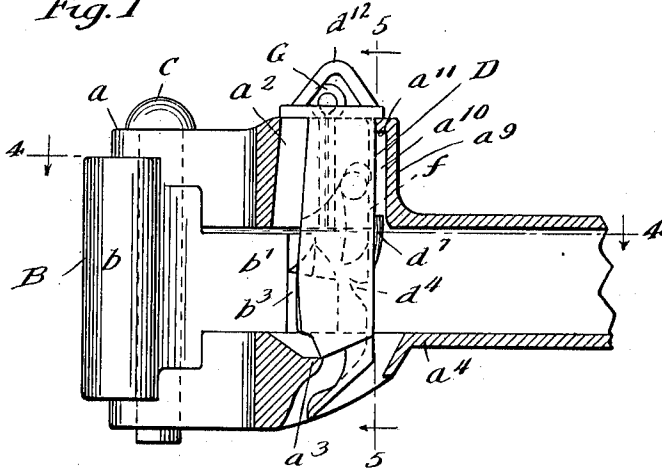


Fig. 2

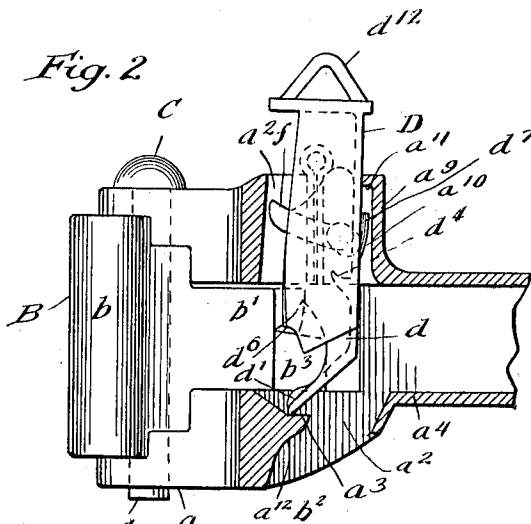


Fig. 3

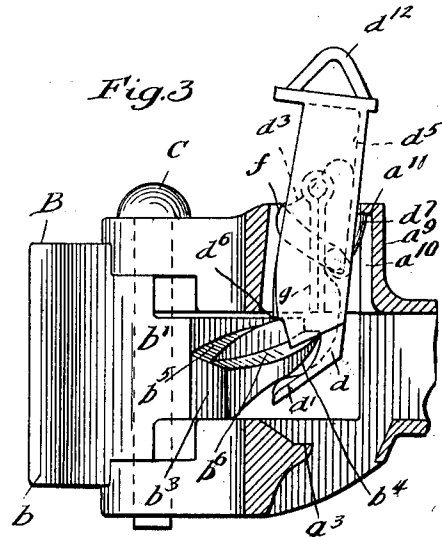
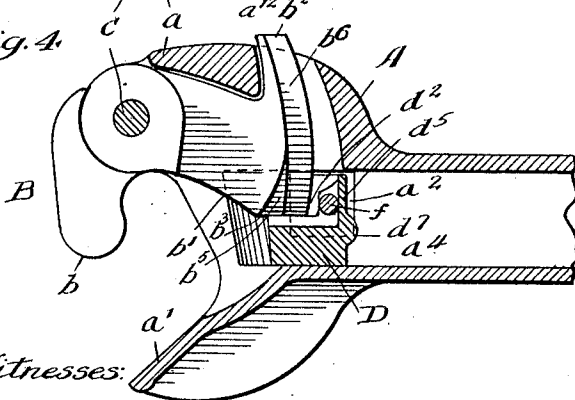


Fig. 4



Witnesses:

M. Geiger
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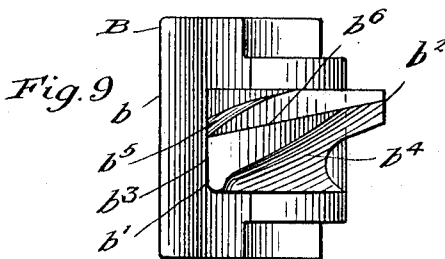
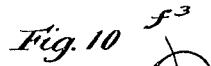
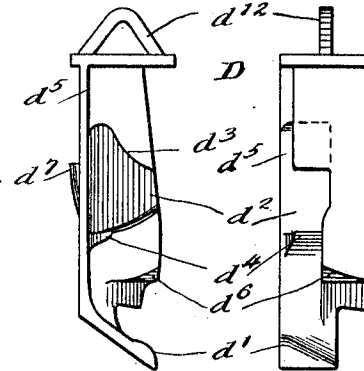
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1,022,335.

2 SHEETS--SHEET 2.



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UNITED STATES PATENT OFFICE.

WILLIAM S. SCHROEDER, OF CHICAGO, ILLINOIS, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO THE NATIONAL MALLEABLE CASTINGS COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

CAR-COUPLING.

1,022,335.

Specification of Letters Patent.

Patented Apr. 2, 1912.

Application filed September 4, 1907. Serial No. 391,297.

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 a vertically movable gravity lock, and more particularly to improvements upon the side lift car coupler heretofore patented to me in the Letters Patent of the United States No. 858,762 of July 2, 1907, although certain features of my invention are applicable to other than side lift couplers.

The object of my invention is to improve and perfect the car coupler of my said Patent No. 858,762 by providing the same with improved means for removably mounting the side lift lever in the draw head, with improved means for imparting to the lock an additional knuckle opening movement to insure the throwing of the knuckle fully open, and with improved means for preventing the lock from reengaging the lock set seat on the draw head as the lock descends when the knuckle closes.

In my present improvement or invention, in order to removably mount the side lifting lever or key in the draw-head in efficient co-operative relation with the other parts, I provide the draw head with a covered external recess or cavity in its side to accommodate the shank portion of the lifting lever, while its bent arm portion is being inserted or withdrawn, and with a vertically extending cotter or pin to guide and hold the lifting lever or key in its operative position, this cotter or pin being first removed when it is desired to remove the lifting lever.

In my improved coupler to impart to the lock an additional knuckle opening movement, I provide the back wall of the draw head with a vertical slot or recess and stop or shoulder which engages a corresponding stop or shoulder on the rear face of the lock when the lock is raised by the lifting lever so that the further turning movement of the

lifting lever will throw the lower end of the lock forward against the knuckle tail, and thus force the knuckle farther and completely open.

In my improved coupler to prevent the lock, after being once lifted off or disengaged from the lock set by the opening of the knuckle from again engaging the lock set and as the lock descends on the closing of the knuckle, I provide the knuckle tail with two tracks, ways or inclines for the lock to ride upon, one outside of the other and one slightly above the other, so that when the lock is lifted or disengaged from the lock set by the inner and upper one, it will, after being partially raised by the opening of the knuckle, drop down from the inner and upper one onto the lower and outer one, and be positively prevented thereby from again engaging the lock set on the draw head when the knuckle closes, and the lock is lowered into position for coupling. My invention also consists in the novel devices and novel combination of parts and devices herein shown and described.

In the accompanying drawing, forming a part of this specification, Figure 1 is a longitudinal vertical section of a car coupler embodying my invention, showing the lock in its lowermost position and the knuckle closed; Fig. 2 is a similar view showing the lock in the lock set position; Fig. 3 is a similar view showing the knuckle thrown completely open by the lock; Fig. 4 is a horizontal section on line 4-4 of Fig. 1; Fig. 5 is a vertical cross section on line 5-5 of Fig. 1; Fig. 6 is a plan view; Figs. 7 and 8 are detail views of the lock; Fig. 9 is a detail view of the knuckle; and Fig. 10 is a detail perspective view of the side lifting lever or key.

In the drawing A represents the draw-head of the coupler, having the customary pivot arm *a* and guard arm *a*¹; B the knuckle, having the customary front arm or nose *b* and rear arm or tail *b*¹; C the pivot pin, D the vertically movable side lift lock fitting in the vertical aperture *a*² of the draw head; and F the side or laterally extending lifting lever, and F¹ the crank arm extension thereof. The draw head A has a lock set seat *a*³ on its lower web or floor *a*⁴

adjacent to the lock aperture a^2 therein. The rear arm or tail b^1 of the knuckle is furnished with the customary hook or extension b^2 , and with a flat upright face b^3 to engage the lock. The rear arm or tail of the knuckle is also provided on its under side with an upwardly and laterally extending knuckle throwing incline b^4 , and also on its upper side or face with an upper and inner track, way or incline b^5 , and a lower and outer track, way or incline b^6 for the lock D to ride upon as the knuckle swings open and closed. The two inclines b^5 and b^6 preferably intersect each other, about as shown in the drawing, and the upper and inner one, b^5 , or the one which is nearer the pivot of the knuckle, serves to lift or disengage the lock from its lock set seat on the drawhead when the knuckle begins to swing open, the further opening movement of the knuckle then causing the lock to drop back slightly off of the upper incline, b^5 , onto the lower one, b^6 , the path or course of which is such as to so guide the lock, on its descent into the coupling position when the knuckle subsequently closes, that the lock cannot in such descent again engage the lock set seat on the draw head. This positively and absolutely prevents all failure to couple by reason of the lock on its descent reengaging the lock set seat. This feature of my invention consisting in providing the knuckle tail with two lock riding inclines or ways, one above and inside the other, may be used upon any ordinary construction of coupler having a gravity lock and a lock set.

The lock D is provided at its lower end with a downwardly and forwardly projecting lock set leg or extension d , having a curved or cam-like upper face d^1 adapted to engage the knuckle throwing incline b^4 on the rear arm or tail of the knuckle to throw the knuckle open. The vertically movable gravity lock D is provided on the knuckle side thereof with a recess d^2 , having an upper curved or cam-like wall or face d^3 for the bent lifting arm f of the lifting lever F to engage or slide and lift against, and having a lower wall or stop shoulder d^4 which serves as a stop for the lifting arm of the lifting lever F to engage when the lock is raised to its full extent, thus limiting the turning movement of the lifting lever. This shoulder d^4 also acts as a stop to prevent creeping of the lock when the knuckle and lock are in their closed or coupled position by engagement with the lower end of the lifting arm f , as will be readily understood from Fig. 1 of the drawing. The recess d^2 also has an upright back wall d^5 . The lock D also has at its front corner a shoulder d^6 which engages and rides upon the inclines or ways b^5 b^6 of the knuckle tail.

The side or laterally extending lifting lever F extends horizontally through a side opening or bearing a^5 in the draw head above the knuckle tail, and the draw head is also provided with a horizontally and forwardly extending covered recess a^6 to accommodate the shank portion of the lifting lever F when the same is swung horizontally forward to enable the bent lifting arm f to be removed from the draw head through said opening a^5 . A vertical guide and retaining pin or cotter G having a split key g , extends through the top or cover wall a^7 and bottom a^8 of the horizontally and forwardly elongated recess a^6 to guide and hold the lifting lever or key F in operative position. The lifting lever F is furnished with a rounded or curved heel f^1 to adapt it to be readily inserted and removed from the draw head when the pin G is removed. The horizontal arm or shank portion of the side lifting lever F may be provided with a cam or eccentric f^2 to increase the throw of its lifting arm on the lock when the lever is turned and to complete the lifting of the lock to the required extent.

To impart to the lock a further knuckle opening movement, and thus cause the same to throw the knuckle completely open, I provide the back wall a^9 of the lock opening a^2 in the draw head with a vertical slot or recess a^{10} , the end of which forms a stop or shoulder a^{11} which coöperates with a stop or shoulder d^7 on the rear face of the lock D, so that the final portion of the upward swinging movement of the lifting arm f on the lifting lever F will force the lower end of the lock forward against the knuckle throwing incline b^4 of the knuckle tail and thus throw the knuckle fully and completely open.

The outer end of the side lifting lever F is provided with an eye f^3 to engage the hook eye f^4 of the lifting lever extension F^1 , having the operating arm or crank f^5 , and which extends to the outside of the car. The crank arm extension F^1 of the lifting lever is loosely supported by a bracket F^2 secured to the front of the car. The loose or knuckle-joint-like connection f^3 f^4 between the lifting lever F and its extension F^1 , enables the draw head of the coupler to move back and forth or up and down as required, without causing any binding or stricture between the lifting lever and its extension.

The draw head A is preferably provided with an inclined projection a^{12} , under which the lock set and knuckle throwing leg or extension of the lock fits when the lock is in its lowermost or closed position, which also aids in preventing the lock from creeping when the cars are coupled together. When the lock is lifted by the side lifting lever F the lower end of the lock swings slightly

backward at the initial upward movement to permit the knuckle throwing leg to clear this rearward projection a^{12} of the draw head.

The lock D may preferably have an eye 5 d^{12} at its upper end, so that it may be used as a top lift lock instead of a side lift lock, if occasion should require.

I claim:

1. In a car coupler, the combination with 10 the draw head, of a knuckle, a vertically movable lock, a side lifting lever having a vertically swinging lifting arm, said lock having a recess to receive and a shoulder to engage said lifting arm, said draw head hav- 15 ing a covered and horizontally and forwardly elongated recess to accommodate the shank portion of said lifting lever when the same is swung forward to permit the bent lifting arm of said lever to be removed or 20 inserted in the draw head, and a vertical

guide pin or cotter for guiding and holding the lifting lever in position, substantially as specified.

2. A car coupler knuckle having a rear arm or tail furnished with two intersecting 25 inclines on its upper face for the lock to ride upon, said inclines being one above the other and one inside the other so that when the knuckle opens, the lock may drop off the upper and inner incline onto the lower and 30 outer incline and so that when the knuckle closes, the lock will ride only on the lower and outer incline until it drops into position for holding the knuckle closed, substantially as specified.

WILLIAM S. SCHROEDER.

Witnesses:

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."