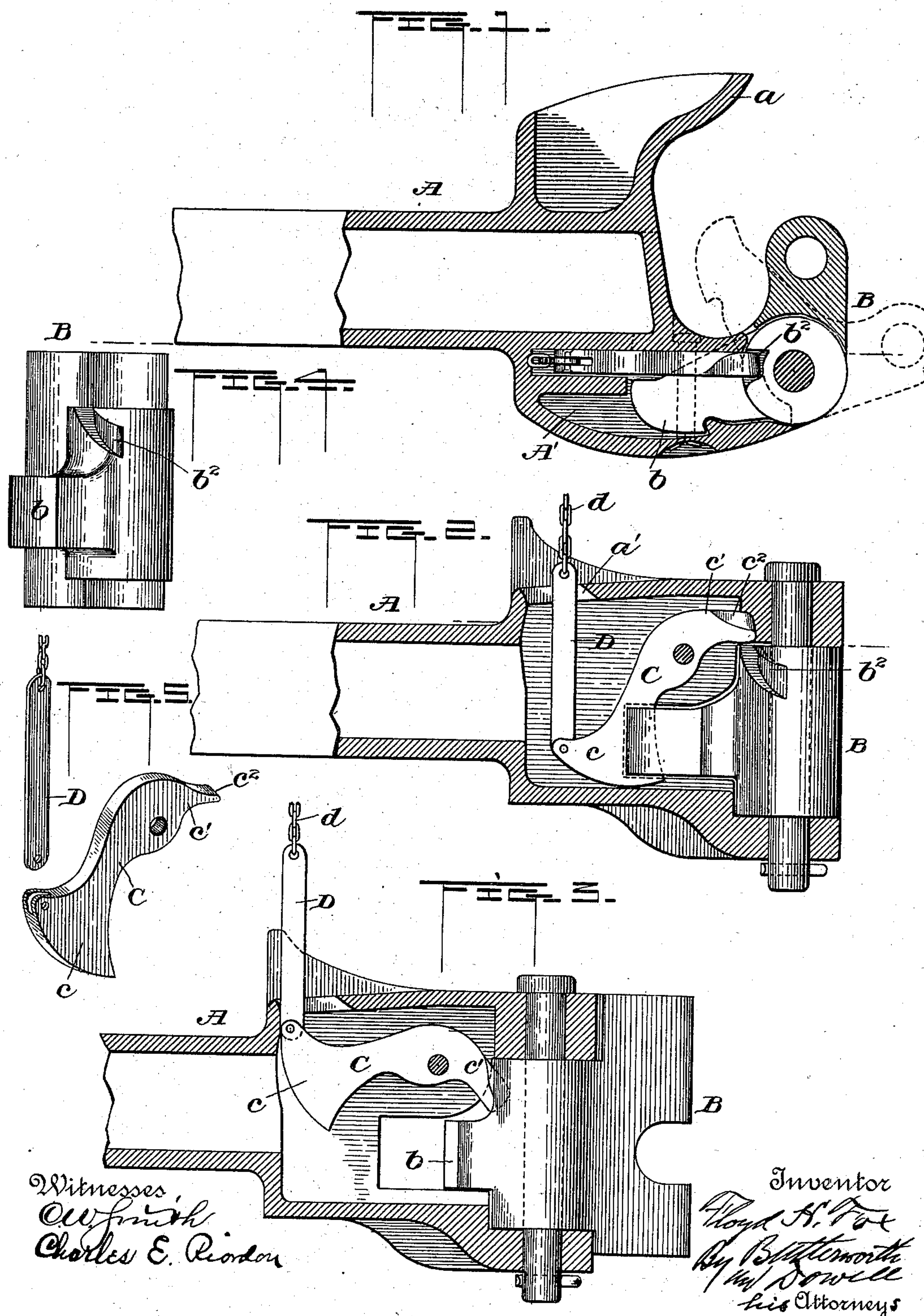


(No Model.)

F. H. FOX.
CAR COUPLING.

No. 560,788.

Patented May 26, 1896.



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UNITED STATES PATENT OFFICE.

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CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 560,788, dated May 26, 1896.

Application filed April 11, 1896. Serial No. 587,152. (No model.)

To all whom it may concern:

Be it known that I, FLOYD H. FOX, a citizen of the United States, residing at New York, in the county of New York and State of New York, 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.

This invention relates to car-couplings, but more particularly to that class of couplings which are recognized in the art as of the Janney type.

The objects of the invention are to provide simple and efficient means for automatically locking the usual angular knuckle in engagement with an opposed coupling device and for unlocking the knuckle and simultaneously positively throwing it open or into position for engaging with an opposed coupling device by the unlocking movement of the locking device, to dispense with the usual sliding locking-block, and reduce the number of parts required for accomplishing the desired results to a minimum, so as to simplify the construction and decrease the cost of production and maintenance or repairs.

The invention will first be hereinafter described with reference to the accompanying drawings, forming a part of this specification, and then pointed out in the claims at the end of the description.

In the drawings, in which the same letters of reference are used to denote corresponding parts in the several views, Figure 1 represents a sectional plan view of a coupler-head with an angular knuckle pivoted thereto and a locking device embodying my invention. Fig. 2 is a sectional side elevation of the coupler-head and locking device, showing the angular knuckle closed and locked. Fig. 3 is a sectional side elevation of the same, showing the knuckle open and the locking-lever in a raised position. Fig. 4 is a perspective view from the rear of the angular knuckle, and Fig. 5 is a detail of the combined locking and unlocking lever and link.

Couplings now in common use are usually provided with a sliding locking device or block adapted to be engaged by the inclined sur-

face of the tailpiece of the knuckle as the latter swings into the recessed coupler-head for raising or moving the locking device out of the path of the tailpiece in coupling and to connect the locking-block with a swinging or rotating portion of the angular knuckle, so as to positively throw the knuckle open or into coupling position at the same time that it is unlocked and by the unlocking movement of the locking device, the block being adapted to return to normal position either by gravity or the force of a spring or weight, so as to lock the tailpiece of the knuckle in the recess of the coupler-head, and thereby lock the angular knuckle when two opposing coupler-heads are brought into engagement with each other; but it has been found in practice that the locking device or block is liable to be broken or bent, so as to seriously interfere with the action thereof or render the same inoperative by the sudden knocks which it receives when the tailpiece is struck by an opposed coupling device in the act of coupling the cars. To overcome this objection, I dispense with the usual sliding block and adapt the tailpiece to close without striking the device by which it is locked, and at the same time automatically lock the angular knuckle in proper position when coupled to an opposed coupler-head, and adapt the locking device to throw the knuckle open in the act of unlocking it, the locking device being itself retained by the knuckle when open in such position that the tailpiece of the knuckle cannot strike it in the act of coupling the cars, so that bending or breaking of the locking device or injury to the coupler-head by sudden thrusts or strokes of the tailpiece against the locking-block is prevented.

Referring to the drawings, A may denote a draw-head, which may be of the form shown or of any preferred construction, and which is provided at one side thereof with the usual guard-finger *a* and at the opposite side thereof with the usual forward extension, to which is pivoted the angular knuckle B in the usual manner, said head being also provided at said side with an internal recess or slot A', within which the locking device C may be housed and adapted to work. The tailpiece *b* of the knuckle B may be of the usual construction

and arranged to swing into the recess A' as usual and to be locked therein by the locking device, which I will now proceed to describe.

5 C denotes a lever of the first order pivoted within the recess A' of the coupler-head, so that its long arm c may swing in a vertical plane within limits determined by the depth of the slot or recess in which it works, said
10 arm c being preferably weighted, so that it may fall by gravity and lock the tailpiece of the knuckle in coupling position when said tailpiece is swung into the recess of the coupler-head. The short arm c' of the lever C is
15 provided with a tongue c^2 , which may be twisted or otherwise formed with inclined upper and lower bearing-surfaces arranged at an angle to the axis or pivot of the lever for engagement with a cam-slot b^2 , formed in
20 the hub of the knuckle B, so that when the long arm of the lever is raised the lower inclined surface of the tongue c^2 will bear upon the lower inclined surface of the cam-slot or groove b^2 and rotate the knuckle upon its
25 pivot, so as to throw it open at the same time that it is unlocked. The position of the parts when the knuckle is open is shown in Fig. 3. In this position, as will be seen, the upper
30 inclined surface of the tongue c^2 will be in contact with the upper inclined surface of the cam-slot or groove b^2 , and by reason of the preponderance of weight of the long arm of the lever the latter will tend to close the
35 knuckle; but on account of the friction sufficient resistance will be afforded to adapt the knuckle to hold the long arm of the lever in an elevated position unless the cars are in motion, in which case the pounding or jarring
40 of the parts will cause the knuckle to close; but in any event the parts are so constructed that the tailpiece of the knuckle will be thrown nearly to the limit of its movement within the recess before the longer or weighted
45 arm of the lever has been lowered far enough to be struck thereby, and as the tailpiece completes its inward movement the weight of the arm c will cause the latter to drop down between the tailpiece and the inner wall of the recess or slot A', so as to lock the tail-
50 piece in coupling position, the upper end of the cam slot or groove b^2 being open or so constructed that the tongue c^2 may escape therefrom and rise above the hub of the knuckle to permit the long arm to move for-
55 ward sufficiently to lock the tailpiece. For raising the tailpiece a link D (or other suitable device) may be pivoted at one end to the long arm of the lever C and have its other end projected through a slot or opening a' in
60 the coupler-head, and a link or chain d may connect said link D with a rock-shaft or crank-arm within convenient reach of the operator at the side of the car or in other convenient
65 position for unlocking the coupling when desired.

The operation of the invention will be readily understood from the foregoing de-

scription when taken in connection with the accompanying drawings, and may be briefly explained as follows: Assuming the parts to 70 be in the position shown in Figs. 1 and 2, the long arm of the lever C may be raised by lifting the chain d , and as the lever is rocked upon its pivot sufficiently to clear the passage for and unlock the tailpiece the shorter arm 75 of the lever will engage the cam-slot in the coupler-head, and the instant the tailpiece is unlocked it will be thrown open by the engagement of the lower cam-surface on the arm 80 c^2 with the lower inclined surface of the cam-slot b^2 , thus simultaneously unlocking the knuckle and throwing it open or into coupling position, as shown in dotted lines in Fig. 1 and in full lines in Fig. 3. In this latter position, the knuckle being open, the upper inclined 85 surface of the tongue c^2 will engage the upper inclined surface of the cam-slot b^2 , so that in such position the lever will tend to close the knuckle, particularly if the coupler be pounded or jostled by the motion of the car or other- 90 wise; but under ordinary conditions the friction between the engaging surfaces of the lever and knuckle will be sufficient to cause the knuckle to hold the long arm of the lever in an elevated position, and in any event the 95 lever cannot fall or be lowered into position to be struck by the tailpiece until the latter has moved inwardly past the path of movement of the lever, so that pounding of the locking device and consequent injury thereto 100 and to the coupler-head are avoided. When an adjacent or opposed coupling device is brought into coupling engagement with the coupler-head with the knuckle open, the tail- 105 piece of the knuckle of the opposed coupling will strike the tailpiece b of the knuckle B and move the latter inwardly into the recess A', and at the same time the long arm of the lever C will be lowered either by its own 110 weight or by the camming action of the cam-slot B² with the cam-surface c^2 thereof, or both, and after the tailpiece has passed far enough into the slot to permit the short arm or tongue c^2 of the lever will escape from the 115 cam-slot, while its long arm moves forwardly and locks the tailpiece, as indicated in Figs. 1 and 2. In uncoupling, the operation will be as hereinbefore described.

In some cases it may not be necessary that the short arm of the lever should actually es- 120 cape from the cam-slot b^2 , provided sufficient play is permitted to adapt the long arm of the lever to move far enough to lock the tailpiece, nor is it absolutely essential that the long arm of the lever should be weighted, as the 125 positive action of the cam-slot thereon will compel its movement in both directions—that is, in both rising and falling; but a weighted arm is preferable to insure the locking of the tailpiece the instant the latter has moved past 130 the path of movement of said arm. A stud or pin on the short arm of the lever might also take the place of the inclined or cam surfaces.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

1. A car-coupling device comprising a coupler-head having a recess therein, an angular knuckle having a tailpiece adapted to swing into said recess and provided with an inclined slot or groove in the hub thereof, and a lever pivoted within said recess and having one of its arms in engagement with said cam-slot, and its other arm adapted to swing into the path of movement of the tailpiece so as to lock the latter; said lever being adapted to unlock the tailpiece and simultaneously open the knuckle, substantially as described.

2. A car-coupling device comprising an angular knuckle having a tailpiece adapted to swing into a recess of the coupler-head, and a lever pivoted within said recess and having one arm thereof engaging an inclined groove or cam-slot formed in the hub of the knuckle, and its other arm arranged to move across the path of movement of the tailpiece and lock the latter in coupling position; said lever being adapted to positively open the knuckle the instant the latter is unlocked and by the movement of the unlocking device, substantially as described.

3. A car-coupling device comprising a coupler-head having a recess therein, an angular knuckle pivoted to said head and provided with a tailpiece adapted to swing into said recess and also provided with an inclined cam-slot or groove, and a lever pivoted within said recess and having a short arm in engagement

with said cam-slot and a weighted arm adapted to move across the path of movement of said tailpiece and lock the latter in coupling position; said lever being adapted to unlock the knuckle and simultaneously open the same when its long arm is raised, substantially as described.

4. A car-coupling device comprising a recessed coupler-head having an angular knuckle pivoted thereto and provided with a tailpiece adapted to swing into said recess; the hub of the knuckle being provided with an inclined open-ended slot having upper and lower inclined or cam surfaces; a lever pivoted within the recess of the head having a long arm adapted to swing into position to lock the tailpiece of the knuckle, and a short arm provided with inclined bearing-surfaces for engaging said inclined slot, whereby when the long arm of the lever is raised so as to unlock the tailpiece the knuckle will be simultaneously positively opened by the engagement of the short arm of the lever with the cam-surface of the slot; the knuckle being adapted to sustain the long arm of the lever in an elevated position and prevent its locking end from moving into the path of the tailpiece to be struck thereby, substantially as described.

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

FLOYD H. FOX.

Witnesses:

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W. E. SEELEY, Jr.