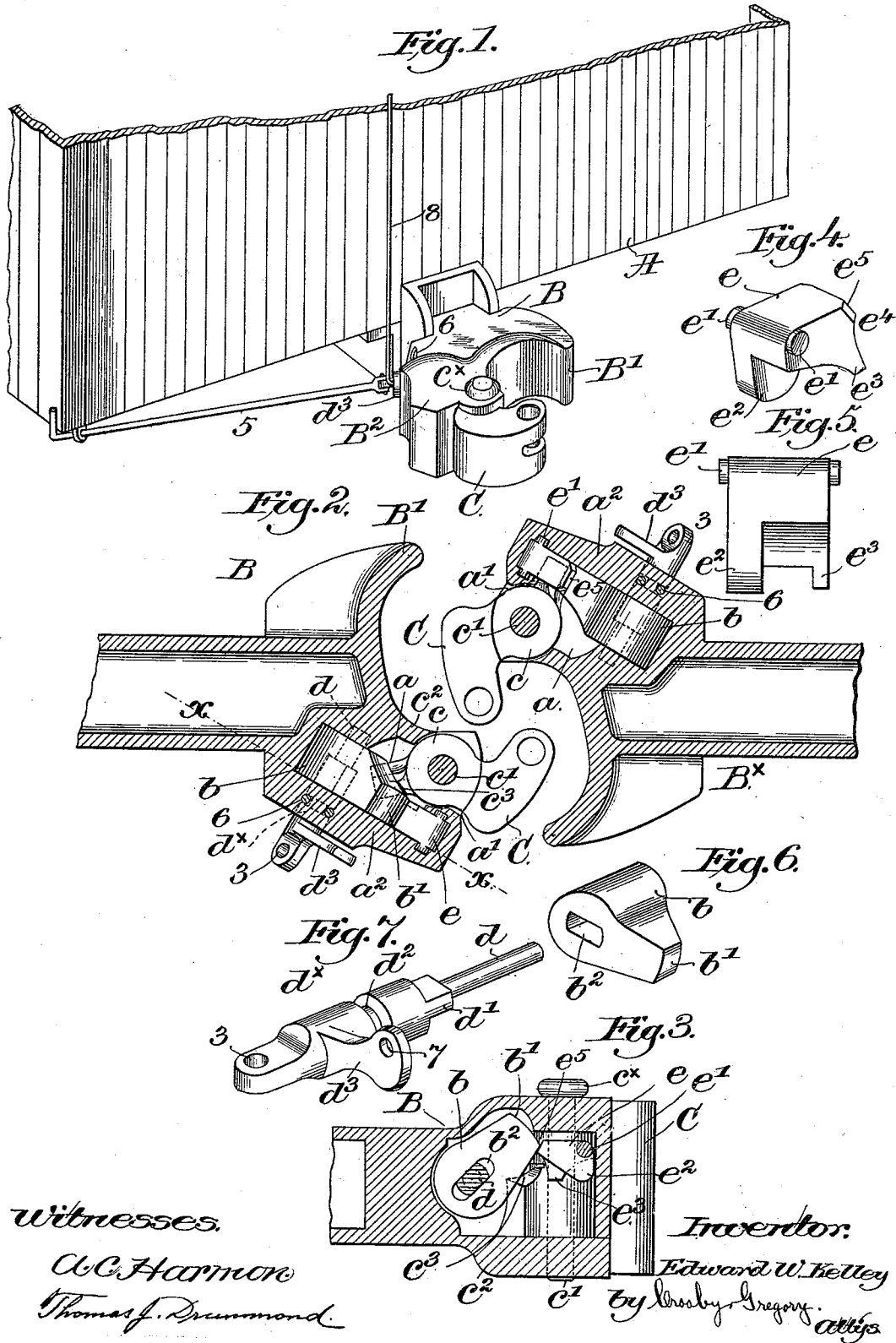


(No Model.)

E. W. KELLEY.
CAR COUPLING.

No. 520,601.

Patented May 29, 1894.



UNITED STATES PATENT OFFICE.

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CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 520,601, dated May 29, 1894.

Application filed February 19, 1894. Serial No. 500,691. (No model.)

To all whom it may concern:

Be it known that I, EDWARD W. KELLEY, of Lowell, county of Middlesex, and State of Massachusetts, have invented an Improvement in Car-Couplings, of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

Various forms of car couplings broadly known as the "knuckle type" have been devised, wherein each of the couplings is a counterpart of the other, the knuckle or coupling member of each being pivoted to turn inward on its axis to interlock with the like member of the opposed coupling, means being provided to automatically lock the knuckle in closed position. In the car couplings of such type known to me the coupling member is extended rearwardly and laterally to project beyond a suitable opening in the face of the draw-head when the said member is opened, in order that such projecting part may be acted upon by some part of the opposed coupling, and turned inward upon its axis, to lock. The opening in the draw-head permits the entry of dirt, snow and ice, and in the latter case, the mechanism within the draw-head is frequently so clogged up by freezing as to render the coupling inoperative until cleaned out, a slow and laborious operation. As the locking mechanism is thus rendered useless, it will readily be perceived that the type of coupling most in favor at the present time is also open to great objection.

This invention has for its object the production of a car coupling of the "knuckle type" which is free from the foregoing objection, while possessing the various well known advantages of such type.

In accordance therewith, my invention consists in the combination, with an interiorly recessed draw-head, of a coupling knuckle pivoted in and closing the entrance to said recess and provided with a tail projecting thereinto, a pivotally supported lock-block in the recess adapted to automatically move into position against the tail of and to lock the knuckle, and independent means to move said block out of the path of the knuckle tail

to permit movement of the knuckle, substantially as will be described.

Other features of my invention will be hereinafter described and particularly pointed out in the claims.

Figure 1 is a perspective view of a portion of a car body, with a coupling embodying my invention applied thereto. Fig. 2 is a plan view, partly in section, of two opposed couplings, the knuckle of one being shown as closed and locked, and the knuckle of the other as open. Fig. 3 is a vertical section taken on the line $x-x$ Fig. 2. Fig. 4 is a perspective view, and Fig. 5, an enlarged rear end view of the dog, to be described. Fig. 6 is a perspective view of the lock-block, and Fig. 7 is a similar enlarged view of the actuating rod therefor.

As herein shown, A represents a portion of the car body to which the draw-head B is attached, the said head having a knuckle inclosing jaw B' at one side, the other side being enlarged as at B², and interiorly recessed at a , see Figs. 2 and 3. The front vertical face of the draw-head is completely closed from the jaw B' to the entrance a' of the recess, the outer side of the head forming the outer wall a^2 of the recess a , see Fig. 2. The sides of the entrance a' of the recess are concaved, as best shown in Fig. 2, to receive the cylindrical portion of the hub c of the coupling knuckle C, so that the entrance is also completely closed whether the knuckle is open or closed, to thereby prevent access of dirt or snow, &c., to the recess a , as an inspection of Fig. 2 will clearly show.

I have shown two opposed draw-heads in Fig. 2, the construction of each being the same, but the operating parts are shown in different positions, and I shall hereinafter designate the draw-head at the left of said figure, in which the knuckle is open, as B, and the opposed draw-head at the right, with the knuckle closed and locked, as B^x, the other parts in each case being designated by like letters. The knuckle is held in place by a vertical pivot or pin c' extended into the draw-head, said pivot, as herein shown, having a retaining head c^x , by which it may be lifted out when it is desired to remove the knuckle.

At the lower part of the hub *c* and rearwardly extended therefrom, I have shown a tail *c*², resting upon and adapted to sweep over the bottom of the recess *a* when the knuckle C is turned on its pivot. The top of the tail has a cam portion *c*³ thereon, for a purpose to be described, and its inner face is preferably concaved, as at *c*⁴, see Fig. 2, to receive the end of the lock-block when locked. A lock-block *b*, shown separately in Fig. 6, has a slightly convexed end *b*¹ to bear against the portion *c*⁴ of the knuckle tail described, when the coupling knuckle is locked, and in the position shown in the draw-head B^x, Fig. 2. The lock-block has an opening therethrough to receive the shank *d* of an actuator, see Figs. 1, 2, 3 and 7, the inner end of the shank being flattened as at *d*¹ to enter the similarly shaped end *b*² of the opening in the lock-block *b* to rotate it, the actuator pivotally supporting the block in the recess *a* of the draw-head, and also serving to move it to unlock the knuckle, or to place it in position preparatory to locking.

Suitable bearings are made in the draw-head for the head *d*^x and for the shank *d* of the actuator, as shown by dotted lines, Fig. 2, the head having an annular recess *d*² to receive the legs of a staple-like fastener 6, the legs of which enter suitable holes in the draw-head intersecting the bearing and straddle the head of the actuator, to prevent accidental withdrawal thereof.

The head of the actuator has an eye 3 therein, to which an operating rod 5 may be attached, said rod extending to the side of the car, as in Fig. 1, and an arm *d*³ projecting from the head *d*^x is provided with an eye 7 for attachment to an operating rod or wire 8 extending to the roof of the car, so that the actuator may be rocked in its bearings either from the side or top of the car.

When the coupling knuckle C is in its locked position, its tail *c*² will occupy its extreme outer position in the recess *a*, as in draw-head B^x, Fig. 2, and the lock-block *b* will have turned until its convex end *b*¹ rests against the side *c*⁴ of the tail *c*², preventing rotative movement of the knuckle on its pivot *c*¹. To unlock the knuckle, it is only necessary to turn the actuator until the lock-block is in the position most clearly shown in Fig. 3, at which time the tail of the knuckle can freely pass under the block when the knuckle is turned outward. In order to retain the lock-block in such raised or inoperative position and yet allow it to automatically move into locking position when the knuckle is closed, I have placed a dog *e* in the recess *a*, in the path of and to hold the block *b* inoperative till the dog is tripped. This dog, shown in position Figs. 2 and 3, and separately in Figs. 4 and 5, is provided with trunnions *e*¹ to rest in recesses in the walls of the recess *a*, the dog rocking upon its trunnions when moved by the lock-block or by the knuckle tail *c*². The dog *e* has a depending portion *e*² at its rear or outer end,

which acts as a counterpoise, and also as a stop to limit the downward movement of the dog by bearing against the inner wall of the recess *a*, as clearly shown in Fig. 3, and at the front of the dog and on the side opposite the portion *e*² I have shown an ear *e*³ preferably concaved on its front face *e*⁴ to permit the convexed end *b*¹ of the lock-block to easily sweep over it when said block is turned on its support by rotating the actuator, as described. Such movement of the block *b* tilts the dog *e* upward until the end *b*¹ can pass by the beveled face *e*⁵ of the dog, whereupon the dog will drop back into its normal position, shown in Fig. 3, with the beveled face *e*⁵ in the path of and preventing the descent of the lock-block, holding it in inoperative position. The ear *e*³ of the dog projects into the path of the cam *c*³ of the knuckle tail *c*², and when the knuckle C is moved from its closed toward its open position, the cam *c*³ acts upon the ear *e*³ to lift the dog sufficiently to release the end of the lock-block *b*, which latter will turn on its support until it rests on the tail *c*². Subsequent movement of the knuckle into closed position carries the tail beyond and from under the block *b*, until it drops automatically into locking position, with its end *b*¹ resting against the face *c*⁴ of the tail, positively locking the knuckle as shown in the draw-head B^x, Fig. 2. It will be understood that the knuckle is moved inward by impact of the vertical front face of the opposed draw-head.

To uncouple two cars the actuator of one of the couplings is turned to lift the lock-block into position shown in Fig. 3, and when the cars are separated the knuckle of the opposed coupling will sweep past the released knuckle, throwing the latter into open position, ready to be coupled when desired to another car.

While both knuckles may be unlocked, it is necessary to unlock only one, and in coupling two cars only one knuckle may be open or both may be.

The presence of the brakeman between cars in coupling or uncoupling is entirely unnecessary to the proper operation of my invention, as will be evident from the foregoing.

Whenever the lock-block is moved into inoperative position, it is automatically retained in such position until the retaining dog is automatically tripped by the movement of the knuckle, and the lock-block released by the positive movement of the coupling knuckle.

The knuckles are provided with link receiving holes 20, whereby they are adapted to be used with an ordinary link and pin coupling. The direction of pull is substantially in the longitudinal axis of the draw-head, and the knuckles interlock sufficiently to securely hold while permitting the rocking due to curves. Should the draw-head break or become detached from the car, as sometimes happens, it would be suspended by the rod or wire 8 and so prevented from falling onto the track, the fastening device 6 holding the actuator in its place, in the draw-head.

My invention is not restricted to the precise arrangement and construction of parts as herein shown, as the same may be altered or modified without departing from the spirit and scope of my invention.

I claim—

1. The combination, with an interiorly recessed draw-head, of a coupling knuckle pivoted in and closing the entrance to said recess and provided with a tail projecting thereinto, a pivotally supported lock-block in the recess adapted to automatically move into position against the tail of and to lock the knuckle, and independent means to move said block out of the path of the knuckle tail to permit movement of the knuckle, substantially as described.

2. The combination with an interiorly recessed draw-head, of a coupling knuckle pivoted thereto and provided with a tail projecting into the recess, a pivotally supported lock-block adapted to automatically move into position to lock the knuckle, and a dog to engage and hold the said block in inoperative position, movement of the knuckle into open position tripping said dog and releasing the lock block, substantially as described.

3. An interiorly recessed draw-head, a coupling knuckle pivoted thereto and provided with a tail projecting into the recess, combined with a lock-block pivoted in the recess and adapted to automatically engage the tail of and hold the knuckle locked, a dog to maintain the block in inoperative position, and independent means to move the said

block into such position, movement of the knuckle into open position tripping the dog to release the block, substantially as described.

4. A draw-head having an inclosed recess, a coupling knuckle pivoted to the draw-head and provided with a tail having a cam thereon, and a dog in the path of movement of and to be tripped by said cam, combined with a lock-block within the recess adapted to automatically move into position against the tail of and to lock the knuckle, and an externally operated actuator upon which said block is supported and by which it is turned to be held by the dog in inoperative position, substantially as described.

5. The combination with an interiorly recessed draw-head, of a coupling knuckle pivoted in and closing the entrance to the recess and provided with a tail projecting into and concealed within the recess, a pivoted dog supported in the draw-head, a lock-block movable into position to be engaged by the dog and held in inoperative position, an externally operated actuator upon which the block is supported, and means to maintain the rod in the draw-head, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EDWARD W. KELLEY.

Witnesses:

GEO. W. GREGORY,
JOHN C. EDWARDS.