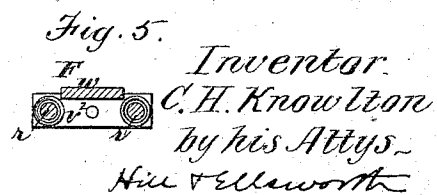
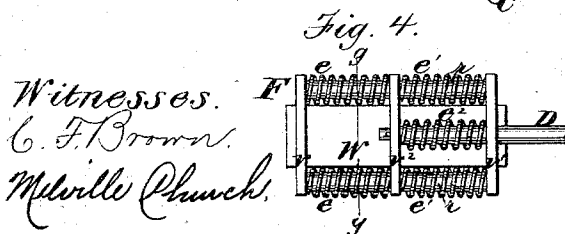
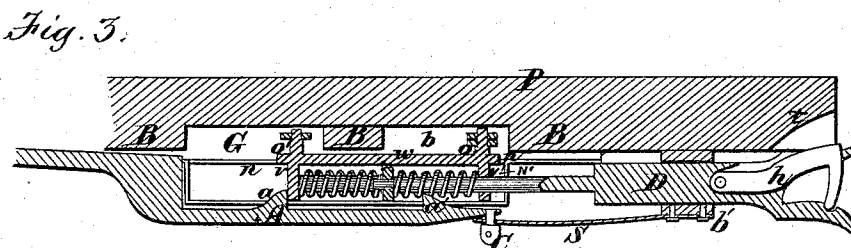
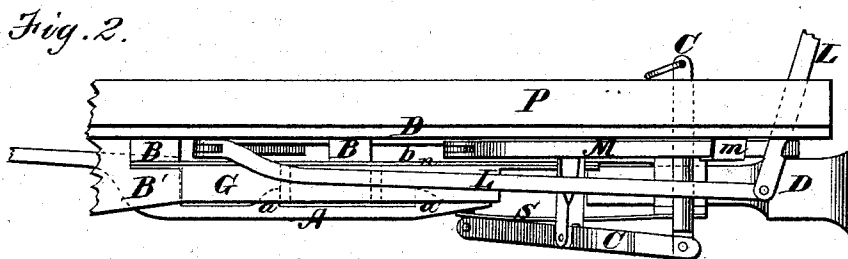
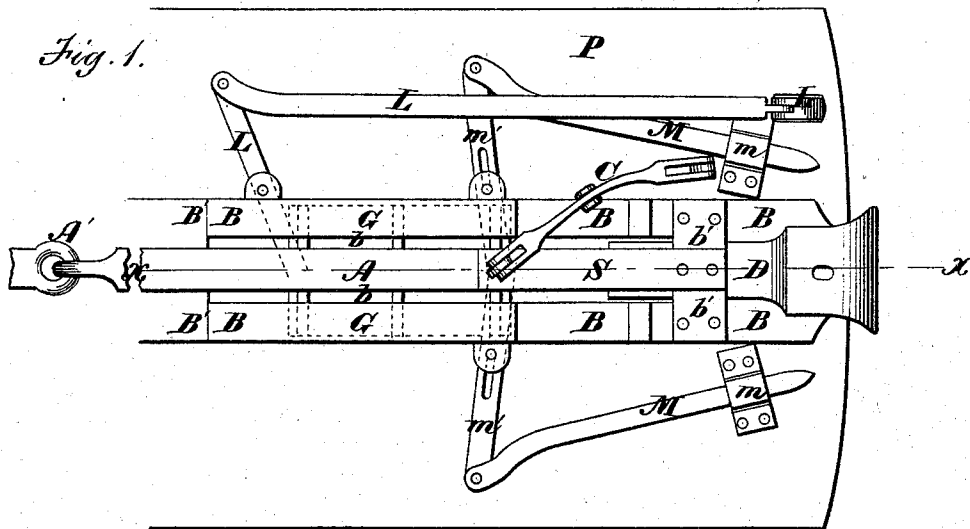


C. H. KNOWLTON.
Car-Couplings.

No. 137,455.

Patented April 1, 1873.



Witnesses.
C. F. Brown.
Melville Church.

Inventor.
C. H. Knowlton
by his Attys.
Hill & Ellsworth

UNITED STATES PATENT OFFICE.

CHARLES H. KNOWLTON, OF ROCKLAND, ASSIGNOR OF ONE-HALF HIS
RIGHT TO FULLER G. COOKE AND JOHN D. SPEAR, OF SAME PLACE,
AND JOSEPH E. ROBINSON, OF AUGUSTA, MAINE.

IMPROVEMENT IN CAR-COUPPLINGS.

Specification forming part of Letters Patent No. **137,455**, dated April 1, 1873; application filed
January 31, 1873.

To all whom it may concern:

Be it known that I, CHARLES H. KNOWLTON, of Rockland, in the county of Knox and State of Maine, have invented a new and Improved Car-Coupling; and I do hereby declare the following to be a full and exact description of the same, reference being had to the accompanying drawing forming part of this specification, in which—

Figure 1 is a bottom-plan view; Fig. 2, a side elevation; Fig. 3, a vertical section in line *x x* of Fig. 1; Fig. 4, a detached plan view of the spring; and Fig. 5, a vertical section in line *y y* of Fig. 4.

Similar letters of reference in the accompanying drawing denote the same parts.

This invention relates more particularly to that class of couplings adapted for use upon passenger-cars, although it may be applied to other railway cars, if desired. The object of the invention is, in the first place, to improve the mode of connecting cars in a train, so as to prevent their jerking and thumping at every change of speed, and to render it safer to pass from one to another; and to this end the invention consists in the adoption of improved means by which the cars can be so coupled that the solid platform of one shall bear directly and constantly against the solid platform of the other. The object of the invention is, in the second place, to more conveniently combine in a car both modes of coupling above referred to, so that the conductor can run the train at his option with or without spaces between the cars; and to this end the invention consists in the employment, for that purpose, of the means substantially as hereinafter described. The object of the invention, in the third place, is to prevent the cars from jumping the track or telescoping; and to this end the invention consists in the employment of strong sliding arms supported under the platform of one car and projecting under the platform of the adjacent car, so that when the arms are projected neither platform can rise or fall independently of the other. The object of the invention, in the fourth place, is to place said projecting arms entire-

ly under the control of the persons in charge of the train, so that they can at any time throw them into or out of operation; and to this end the invention consists in the employment of means for thrusting out or retracting the arms, substantially as hereinafter described. And, lastly, the object of the invention is to combine the means for locking the platforms in close contact or unlocking them with the means for thrusting out or drawing back the sliding arms, so that the movement of a single lever will lock the platforms in close contact and thrust out the arms, or unlock the platforms and draw back the arms.

When the platforms are held in close contact and the arms securely locked beneath them the train will be run with the highest degree of safety and comfort, and all the advantages of my improvement fully realized. When the coupling is relaxed, the platforms separated, and the arms withdrawn from under them, the train will be run in the same manner as with any ordinary coupling now in use.

The invention is entirely independent of the form of the draw-head, link, or pin, and may be applied either in connection with the automatic or the common couplings, as preferred.

Having thus stated the general nature and the objects of my invention, I will now proceed to describe one means by which it may be carried into effect.

In the drawing, P represents the platform, the edges of which may be protected by metal plates or chafing gear of any approved construction, and may be provided with spring-buffers, if preferred. B is a bed-plate affixed to the under side of the platform, and provided with a stout block, B', at its rear end, a groove or recess, *b*, along its middle, and near its front end a strap, *b'*, that passes around the draw-bar D, for the purpose of limiting the range of vertical and lateral movement of the draw-bar. F is a strong sliding frame, composed of two cross-pieces, *v v'*, fixed rigidly to the ends of two stout rods, *r r*, the whole being secured to a strengthening-plate, *w*, on the upper side of the frame, as repre-

sented in Figs. 4 and 5. The two rods $r r$ pass through the ends of an intermediate cross-bar, v^2 , which slides freely upon them, except as confined by four springs, $e e e^1 e^2$, coiled around the rods, as shown. The rear end of the draw-bar extends through a hole in the front cross-bar v^1 to the intermediate cross-bar v^2 , to which it is fastened in any suitable manner, and a spring, e^2 , is coiled around the draw-bar between the cross-pieces $v^1 v^2$, as represented. The frame F , thus constructed, is placed in contact with the under side of the bed-plate, with the longitudinal part w fitting closely into the groove b to guide the forward-and-backward movement of the frame and the draw-bar. The frame is held in position by means of stout angle-iron plates G applied to the bed-plate at the sides of the groove b , so as to securely incase the lateral edges and a portion of the under side of the frame, but leave the space along the center in line with the draw-bar open on the under side to accommodate the locking device A . The latter is in the form of a stout bar provided with two stops or dogs, $a a$, having their proximate faces vertical and their outer faces inclined, and arranged as shown in Fig. 3. A spring, S , is arranged to bear upward against the locking-bar, and cause the stops to engage with the cross-bars $v v^1 v^2$, for the purposes hereinafter referred to. The rear end of the lock-bar may be connected, by means of a jointed rod, A , or its equivalent, to the frame of the car, to enable the apparatus to sustain a greater longitudinal draft. A lever, C , the handle of which extends up through the platform, is connected to the forward end of the bar A , as clearly represented in Fig. 2, so that the brakeman can at any time by raising the handle disconnect the stops from the frame F , and allow the latter to slide freely back and forth. Another lever, L , provided with a handle which likewise extends up through the platform, is connected to the frame F , as shown in Figs. 1, 2, so that the brakeman can, by a movement of this lever, slide the frame and the draw-bar back and forth at will. The handle of the lever C is operated vertically, and suitable pawls or stops may be provided to hold it in place when raised. The handle of the lever L is operated horizontally, and does not need a pawl for the purposes referred to. $M M$ are the two arms or bolts, which are capable of being caused to project beyond the edge of the platform to lock under or into the platform of the opposite car, for the purposes hereinbefore indicated. Said arms are beveled at their front ends, and pass through guide-straps $m m$ attached to the under side of the platform. The straps are so constructed as to give the ends of the arms a sufficient lateral and vertical play. The arms are connected at their rear end, by means of slotted levers $m' m'$, to the frame F at or near its forward end. A very excellent method of articulating both the levers $m' m'$ and the lever L to the sliding frame is by casting upon the upper side of the plate w two projecting

knobs or pins, $o o'$, and providing holes in the ends of the levers which fit over the pins, as represented in Fig. 3. The side wall of the groove b is slotted to accommodate the levers $L m' m'$, which are pivoted in or near said slots in any suitable manner.

The sliding movement of the draw-head enables me to prevent the possibility of the cars becoming accidentally uncoupled, for I can easily arrange either the automatic or the common coupling so that the pin or hook can be inserted in or removed from the link when the draw-head is thrust out, but not when it is drawn back.

In Fig. 3 the draw-head is represented as thrust out, and the hook h can be easily raised to admit the link; but with the construction shown in said figure the shoulder t on the platform above the hook will prevent the latter from being raised out of the link when the draw-head is drawn back. In the old-fashioned draw-heads the coupling-pin can be arranged to come beyond the edge of the platform when the draw-head is thrust out, but to come under the edge of the platform so as to be incapable of working out when the draw-head is drawn back.

The draw-head itself I prefer to make with a long incline under lip, sharp at its lower edge, so that the link will enter with certainty and without assistance.

The operation of the various parts of the mechanism above described is as follows: If the cars are to be run with the platforms apart the handle of the lever C is drawn up by the ring attached to its upper end in order to disengage the bar A from the frame F , and while it is up the handle of the lever L is thrown forward in order to slide the frame F and draw-bar D forward. When the latter has been thrust forward far enough the lever C is released, and the stop a upon the bar A engages behind the cross-piece v , and prevents the frame F and the draw-bar from being forced back to their former position by the application of any force, however great, to the draw-bar. The cars may then be coupled and run in the ordinary manner, the spring e^2 giving the draw-head all the longitudinal play that is necessary. The arms $M M$ will be drawn back under their respective platforms by the forward movement of the parts $F D$, so that their adjustment demands no attention whatever on the part of the operator. If the cars, on the other hand, are to be run with the platforms locked together in close contact, then, after coupling them, the lever C is to be raised, as before, to disengage the bar A from the frame F , and while said parts are disengaged the handle of the lever L is to be thrown backward until the cross-piece v^1 passes behind the strap a' . The same movement of the lever L that thus draws the frame F and draw-bar D back, bringing the two cars in close contact, and taking up all the slack of the links, also thrusts the two arms $M M$ forward, causing them to project under or into the platform of

the opposite car. The sliding arms of both cars being thus projected forward, it is evident that the cars will be firmly locked together, so that neither can rise or fall independently of the other, and it becomes impossible for them to "telescope" into each other in case of an accident.

In constructing many of the parts referred to in the preceding description, considerable latitude may be allowed in the mere details. For example, the part referred to as the bed-plate B may be formed by means of the timbers composing a portion of the frame of the car, said timbers being slotted at their sides to accommodate the levers L *m' m'*; and when this construction is employed the wooden parts in contact with the sliding frame F and draw-bar D should be sheathed or protected by metal plates. Such protecting-plates may be seen in the drawing at *n n n*. So, too, the back support of the locking-bar A may be derived from two straps of iron running back on each side of said frame-timbers to the rock-bolt, or to any other suitable part of the car-frame, said straps being connected to the part A by an eyebolt, as represented in the drawing.

It is obvious that a hand-wheel and chains, or other mechanical equivalents, may be substituted for the levers O and L without changing the nature of the invention, the essential requisite being the employment of some mechanical means capable of being operated by a person on the car-platform to accomplish the sliding of the parts F D M and the moving of the lock-bar at the will of the operator.

Having thus described my invention, what I claim as new is—

1. A sliding frame to hold the springs of the draw-bar, combined with such springs and with the draw-bar and platform in such a manner that the frame, springs, and draw-bar can all be moved forward and backward together at will without changing their relative position to each other, substantially as described, for the purposes specified.

2. The frame F, draw-bar D, and springs *e e'* *e''*, combined substantially as and for the purposes set forth.

3. The frame F, draw-bar D, and bar A, having two stops, combined and operating substantially as and for the purposes set forth.

4. The spring S, in combination with the frame F, draw-bar D, and the two stops, substantially as and for the purposes described.

5. In combination with the sliding frame, the

sliding draw-bar, and the stops, a lever, or its equivalent, so arranged that by means of it the operator, standing upon the car-platform, can disengage the stops from the sliding parts, and leave the latter free to move, substantially as and for the purposes described.

6. A sliding draw-bar, a stop for holding it projected beyond or retracted beneath the platform, and a device for throwing the stop into or out of connection with the sliding parts, in combination with a lever, or its equivalent, extending to the platform, so that the whole apparatus can be adjusted and locked by a person standing on the platform, substantially as and for the purposes described.

7. The lever L, in combination with the sliding frame F, the locking-bar A, the lever C, and the draw-bar D, substantially as and for the purposes described.

8. The sliding arms M M, capable of being operated by means of a lever, L, or its equivalent, by a person standing on the platform, substantially as and for the purposes set forth.

9. The sliding arms M M, in combination with a locking device constructed to lock the arms in position when either thrust out or drawn back, substantially as and for the purposes set forth.

10. The combination of the sliding arms M M with the sliding draw-bar D, when constructed and connected so that a movement of the draw-bar in one direction moves the arms in the opposite direction, substantially as described.

11. The sliding arms M M, in combination with the sliding draw-bar D and frame F, and with the lock A and lever L, substantially as described, for the purposes specified.

12. A sliding draw-bar, a locking device, and sliding arms M M, in combination with a lever to operate the locking device, and a lever to operate the draw-bar or arms, or both, said levers being both arranged to be operated from the platform of the car, substantially as and for the purposes set forth.

13. The sliding draw-head D and the hook *h*, in combination with the shoulder *t* on the platform, substantially as and for the purposes set forth.

CHARLES H. KNOWLTON.

Witnesses:

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CHAS. A. DAVIS.