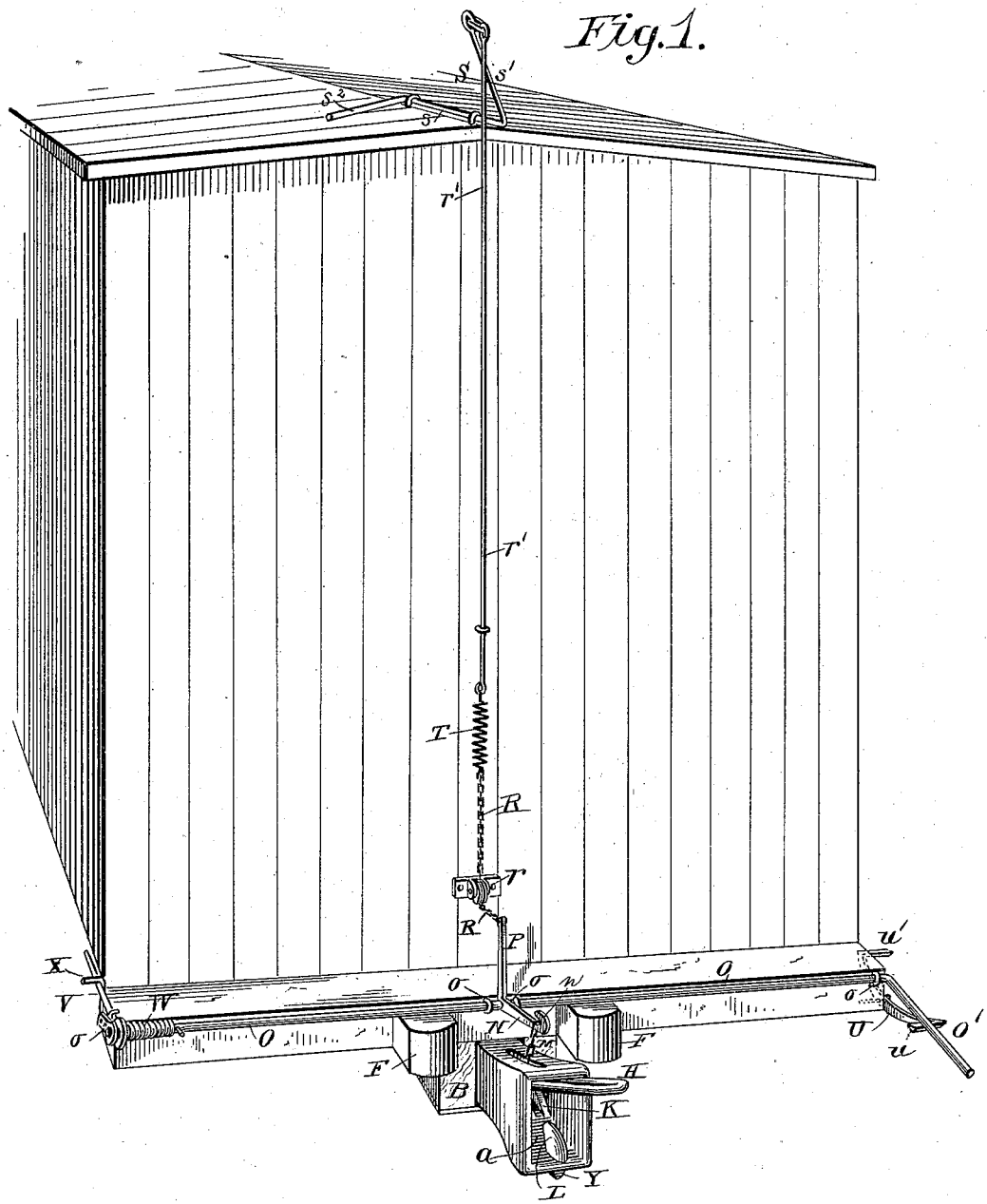
(No Model.) 2 Sheets—Sheet 1.

H. S. McKAGUE.

CAR COUPLING.

No. 385,129. Patented June 26, 1888.

Fig. 1.



WITNESSES:

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C. Sedgwick

INVENTOR:

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ATTORNEYS.

(No Model.) 2 Sheets—Sheet 2.

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Fig. 2.

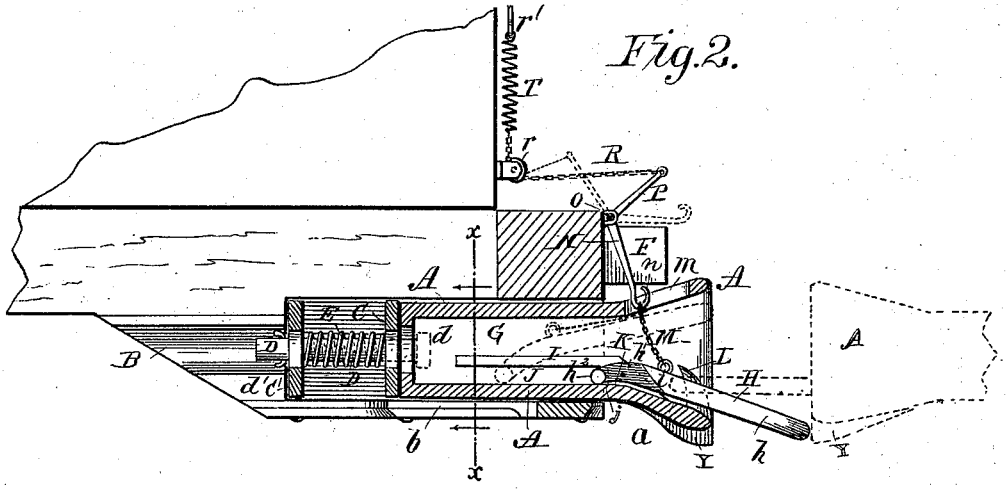


Fig. 3.

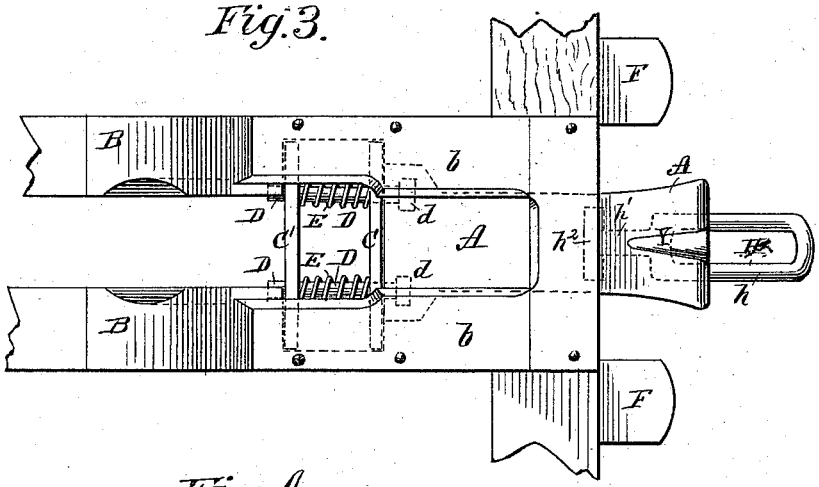


Fig. 4.

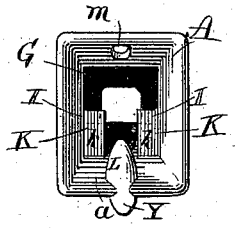


Fig. 5.

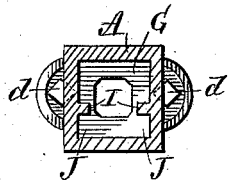
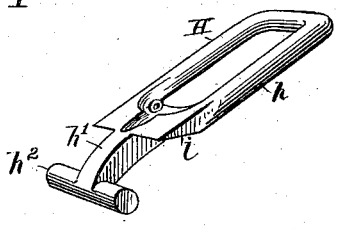


Fig. 6.



WITNESSES:

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UNITED STATES PATENT OFFICE.

HERBERT S. McKAGUE, OF McELHATTAN, PENNSYLVANIA.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 385,129, dated June 26, 1888.

Application filed November 29, 1887. Serial No. 256,430. (No model.)

To all whom it may concern:

Be it known that I, HERBERT S. McKAGUE, McElhattan, in the county of Clinton and State of Pennsylvania, have invented a new and Improved Car-Coupling, of which the following is a full, clear, and exact description.

My invention relates to safety car-couplings, and has for its object to provide a simple, durable, and efficient coupling of this character which will allow the cars to be coupled or uncoupled by a train-man either on the ground at the side of the car or on the top of the car, and will also allow automatic uncoupling of cars for shunting them about the yard or when making flying switches, and all without requiring the train-men to stand between the cars and expose themselves to injury.

The invention consists in certain novel features of construction and combinations of parts of the car-coupling, all as hereinafter fully described and claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a perspective view of the end portion of a box-car with my improved coupling applied. Fig. 2 is a longitudinal vertical section of the coupling and adjacent parts of the car, and shows an opposing draw-head in dotted lines. Fig. 3 is a bottom plan view of the coupling. Fig. 4 is a front view of the draw-head of the coupling. Fig. 5 is a cross-section of the draw-head, taken on the line x x, Fig. 2; and Fig. 6 is a perspective view of the coupling-link.

The draw-head A of the coupling is fitted to slide between beams B B, ranging longitudinally of the car, and fixed to its frame and upon rests or plates b b, fixed to the beams B B. These plates b b also support movable buffer-plates C C′, which are fitted between the beams B B behind the draw-head, and bolts D D, having heads d inside of lateral enlargements or sockets at the back end or wall of the draw-head, pass through said wall and through the buffer-plates, and have pins d' passed through them behind the plate C′. Between the plates C C′ and upon the bolts D D are placed spiral buffer-springs E E, which normally expand, and are compressed to prevent shock to the parts by both the pull on the draw-head by the link and the pushing of the draw-head by the draw-head of an opposing car. The usual bumpers, F F, are provided on the car-frame at the sides of the draw-head.

The draw-head A is provided with a large interior cavity or socket, G, more than deep enough to allow the coupling-link H to pass for its entire length into the socket, and at each side of the socket a flange, I, is fixed to or formed on the draw-head walls and at a little distance from the floor of the socket, and whereby are formed between the opposite flanges I I and the socket-floor opposite side grooves or ways, J J, which terminate at their forward ends in shoulders j, next the rear ends of lugs or lateral projections K K, the forward or outer faces, k k, of which are inclined downward and forward to the sloping or diverging front face or floor portion, a, of the draw-head to which is held a front hook or horn, L, which projects upward, and is inclined or rounded over at its front face, up which the end of a coupling-link held by an opposing car may ride to drop behind the horn for coupling the cars. This horn L may be fitted in the draw-head in any approved way, allowing substitution of a new horn for a broken one.

The coupling-link H is peculiarly formed and as shown most clearly in Fig. 6 of the drawings. Its front portion, h, is link-shaped, providing an opening admitting the horn L of an opposing coupling or the common pin of an ordinary coupling when coupling to cars provided with the link-and-pin draw-head. At the rear end of its portion h the link H has a central longitudinal ranging stem, h', to the outer end of which is fixed a cross-bar, h^2. The stem h' is curved longitudinally, being convex at the upper face, and where the stem joins the open portion h of the link inclined shoulders i i are formed at each side, and these shoulders are adapted to ride up or upon the inclined faces k k of the socket-lugs K K, and are also adapted to ride upon or over and along the socket-flanges I I, while the opposite ends of the cross bar or head h^2 of the link travels in the opposite ways or grooves J J, below the flanges. When the link H is pushed back far enough in the draw-head socket G, the opposite ends of its cross-bar h^2 will fall from and past the inner ends of the opposite flanges I, and when the link is drawn forward the cross-

bar will ride along the ways J until the cross-bar bears on the shoulders *j* to take the draft strain of hauling the car. While the cross-bar h^2 slides in the ways, the link-shoulders *i* will bear on the flanges I. It is obvious, as the cross-bar H^2 cannot have vertical play in the ways J, that the inward movement of the link from the position indicated in full lines in Fig. 2 of the drawings will, by causing contact of the link and draw-head inclined faces *i k*, cause the outer end of the link to be gradually raised, and it follows that while the outer end of the link is being raised the link shoulders or faces *i* will ride over the inclined faces *k* and onto the flanges I. Furthermore, should the outer end of the link be slightly raised to move the link upward and backward, but not sufficiently to cause the link-faces *i* to ride upon the draw-head flanges I, the weight of the link would cause it to fall again and its outer end would be gradually slid forward until the cross-bar h^2 stopped at the draw-shoulders *j*.

To provide for lifting the outer end of the link to enter it into an opposing draw-head, and at the same time to allow the link to be forced clear back in the draw-head, as indicated by the dotted lines in Fig. 2 of the drawings, I connect to it a chain or cord, M, which is passed through a slot, *m*, in the top of the draw-head, and is connected to an eye or loop, *n*, at the outer end of an arm, N, which is fixed to a rock-shaft, O, journaled in suitable bearings, *o*, on the car-body; and to the shaft O also is connected an arm, P, to which is attached a chain or cord, R, which is guided beneath a pulley, *r*, or other suitable keeper, held to the car body, and extends by any suitable cord, wire, or rod connection to the top of a box-car, where it is connected to one arm, *s'*, of an operating lever, S, which is journaled by its axial portion *s* in staples or bearings on the car, and is provided with another arm, s^2, which projects from the part *s* in a plane at about or a little less than a right angle with the plane of projection of the other arm, *s'*, of the lever.

When the arm s^2 is lowered to the car-body, the end of the connection between the chain R and the lever will have been thrown over past the axis or fulcrum *s* of the lever; hence the jar of travel of the car cannot throw the lever over or with its arm *s'* flat to the car-body, which movement, however, may readily be made by a train-man on top of the car. It is obvious that by manipulating the lever S the chain R and arms P N may be operated to lift the outer end of the link H more or less to cause the link to properly enter an opposing draw-head for coupling two cars, the entire operation thus being controllable from the top of the car.

The drawings, in Fig. 1, show the connection between the chain R and lever S, consisting of a rod, *r'*, attached to the lever, and a spring, T, interposed between the rod *r'* and the chain. This spring T, which normally contracts when put in tension, allows lifting or lowering of the coupling-link by operating the lever S; but the principal office or function of the spring is to uncouple two cars while making a "flying switch," and as hereinafter explained.

At one end the shaft O is bent to form an arm, O', or may be provided in any manner with said arm, which extends about at right angles from the shaft, and at this side of the car is fulcrumed, about at its center, a lever, U, which has one bent end or arm, *u*, which extends beneath the shaft-arm O', and at its other end the lever is preferably provided with an outbent arm, *u'*, serving as a treadle onto which a train-man may press with his foot to turn the rock-shaft O for setting or manipulating the coupling-link, while he may use his hands, or one of them, for signaling the engineer or other person, as circumstances may require. At the other end of the rock-shaft O is held loosely a lever or arm, V, and next the lever on the shaft is placed a coiled spring, W, one end of which is fixed to the shaft and the other end of which is fixed to the lever, and whereby, when the lever V is turned over backward or into the position shown in Fig. 1 of the drawings, the spring W will be put under torsional strain. A suitable hook, X, held to the car-body, may be swung over the lever to retain it in backward position. The torsion of the spring W normally tends to turn the shaft O backward to lift the arm N, and consequently the chain M and coupling-link H; but the spring cannot do this while the draft strain of hauling the car is on the link; but when the speed of the cars is slackened and the draft strain is relaxed the spring W, when in torsion as above described, will act instantly to lift the link from the draw-head horn L and assure uncoupling of the cars. The spring T, when put in tension by turning the lever S at the top of the car to the position shown in Fig. 1 of the drawings, will also lift the link H from the draw-head horn L when the draft strain is relaxed; hence by operating the lever V from the ground at the side of the car, or by operating the lever S at the top of the car, any two cars of a train may be uncoupled while making a flying switch or for any other purpose.

The draw-head A is provided at its under side and front portion with a depending lug, Y, which forces a low hanging link back into the draw-head of an opposing car, and as will be understood from the full and dotted lines in Fig. 2 of the drawings.

The coupling of two cars may be effected by turning the shaft O by operating either of the levers O', S, or U to lift the link as may be required for its engagement with the horn L of an opposing draw-head, and should the link to be used be forced back into the draw-head the pull on the chain M, when the shaft O is turned, will draw the link forward into the opposing draw-head, and by releasing the shaft O the link will fall over the horn L of said

draw-head to couple the cars. When it is desired to make a flying switch, the lever V of one of two cars where the uncoupling is to be effected will be turned over backward and retained by the hook X to put the spring W in torsion while the draft strain is on the cars, or at this time the lever S of one car may be turned to the position shown in Fig. 1 to put the spring T in tension, and as the draft strain of the swiftly-moving cars is relaxed either spring W or T will operate to lift the coupling-link and uncouple the cars, whereupon the cars forward of the one or more to be switched off will be pulled forward quickly to keep the main track, while the uncoupled cars will run onto the siding opened after the forward cars had safely passed the siding-switch onto the main-line rails, as will readily be understood.

An ordinary coupling-pin may be used by passing it through the draw-head slot *m* and a hole in the draw-head floor, to allow use of a common link and pin to effect a coupling of two cars.

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

1. In a car-coupling, the draw-head formed with a link-socket, G, having a top opening, *m*, and provided at opposite sides with horizontal longitudinally-extending flanges I, and lugs K, forming ways J, and draft-shoulders *j*, substantially as set forth.

2. In a car-coupling, the draw-head formed with a link-socket having an opening, *m*, in its top, and provided on its inner sides with horizontal longitudinally-extending flanges I, and lugs K at the forward ends thereof, forming ways J, and draft-shoulders *j*, the horn L in its bottom, and the projection Y on the outer face of the forward edge of the bottom, substantially as set forth.

3. In a car-coupling, the draw-head made with a link-socket, G, provided at opposite sides with flanges I and lugs K, forming ways J, and draft-shoulders *j*, and said draw-head provided also with a horn, L, in combination with a coupling-link, H, formed with front link portion, *h*, a stem, *h'*, and a cross-bar, h^2, and said lugs K having inclined front faces, *k*, and the rearward-sliding link having corresponding inclined faces or shoulders, *i*, substantially as described, for the purposes set forth.

4. In a car coupling, the draw-head made with a link-socket, G, provided at opposite sides with longitudinally-extending flanges I and lugs K, forming ways J, and draft-shoulders *j*, and said draw-head provided also with a horn, L, and an opening, *m*, in its top, in combination with a rearwardly-sliding coupling-link, H, formed with front link portions, *h*, a stem, *h'*, and a cross-bar, h^2, a rock-shaft, O, journaled on the car and provided with an arm, N, and a flexible connection, M, extending through the opening *m* and connecting said arm and the coupling-link, substantially as shown and described.

5. In a car-coupling, the combination of the draw-head, a coupling-link therein, a rock-shaft, O, journaled on the car and provided with an arm, N, a flexible connection, M, between the link and arm, an arm, P, on the shaft, a lever, S, fulcrumed at the top of the car and formed with axis *s*, and arms *s'* s^2, and connections, as R *r'*, between the arm P and lever S, substantially as described, for the purposes set forth.

6. In a car-coupling, the combination, with the draw-head, a coupling-link therein, and a shaft, O, journaled on the car and provided with an arm, N, connected to the link, and an arm, O', on the shaft, of a foot-lever, U, fulcrumed on the car and having an arm, *u*, extending across the shaft-arm O', substantially as described, for the purposes set forth.

7. In a car-coupling, the combination, with the draw-head, a coupling-link therein, and a shaft, O, journaled on the car and provided with an arm, N, connected to the link, of a lever, V, placed loosely on the shaft, a spring, W, on the shaft, and connected at one end to the shaft and at the other end to the lever, and a detent, X, for said lever, substantially as described, for the purposes set forth.

8. In a car-coupling, the combination, with the draw-head, a coupling-link therein, and a shaft, O, journaled on the car and provided with an arm, N, connected to the link, of an arm, P, on the shaft, a lever, S, journaled at the top of the car, a connection between the parts P S, and a spring, T, interposed in said connection, substantially as described, for the purposes set forth.

9. The combination, with a draw-head provided with a rearward-sliding and vertically-swinging link, of an opposing draw-head provided with a lug on its lower face at the front thereof, to force the link inward and thereby raise it, substantially as set forth.

10. The combination, with a draw-head formed with a rearward-sliding and vertically-swinging link, a lever, and a flexible connection extending through the draw-head and engaging the link, of an opposing draw-head having an internal horn and a lug on its lower face at the front end thereof, to strike the link and force it inward and upward, whereby by then operating said lever the link may be shot forward into engagement with the horn of said opposing draw-head, substantially as set forth.

11. The combination, with the draw-head and its coupler, of a spring connected with said coupler and means for setting the spring to exert its force upon the said coupler, whereby when the draft strain is lessened the coupler will be disengaged from the opposing draw-head, substantially as set forth.

12. The combination, with the draw-head and its coupler, of an automatically-operating uncoupler comprising a rock-shaft connected with said coupler and spring connected with said shaft for rocking it and releasing the coupler, substantially as set forth.

13. The combination, with the draw-head and the coupling mechanism, of a spring-actuated uncoupling-shaft connected with said coupling mechanism, and a lever for setting said spring-actuated shaft, substantially as set forth.

14. An automatic uncoupler for cars, consisting in a rock-shaft having flexible connections for connecting it with a coupler, a torsion-spring secured at one end to the shaft, a lever loose upon the said shaft at the side of a car and connected to the opposite end of the spring for putting it under torsional strain, a second lever to be secured at the top of a car and connected to said rock-shaft, and a longitudinally expansible and contractible spring forming part of the connection between said top lever and the rock-shaft, whereby the rock-shaft may be set to be actuated by either spring, substantially as set forth.

HERBERT S. McKAGUE.

Witnesses:
H. T. HALL,
PAUL S. MERRILL.