

(No Model.)

2 Sheets—Sheet 1.

S. L. DENNEY.
CAR COUPLING.

No. 510,903.

Patented Dec. 19, 1893.

Fig. 1.

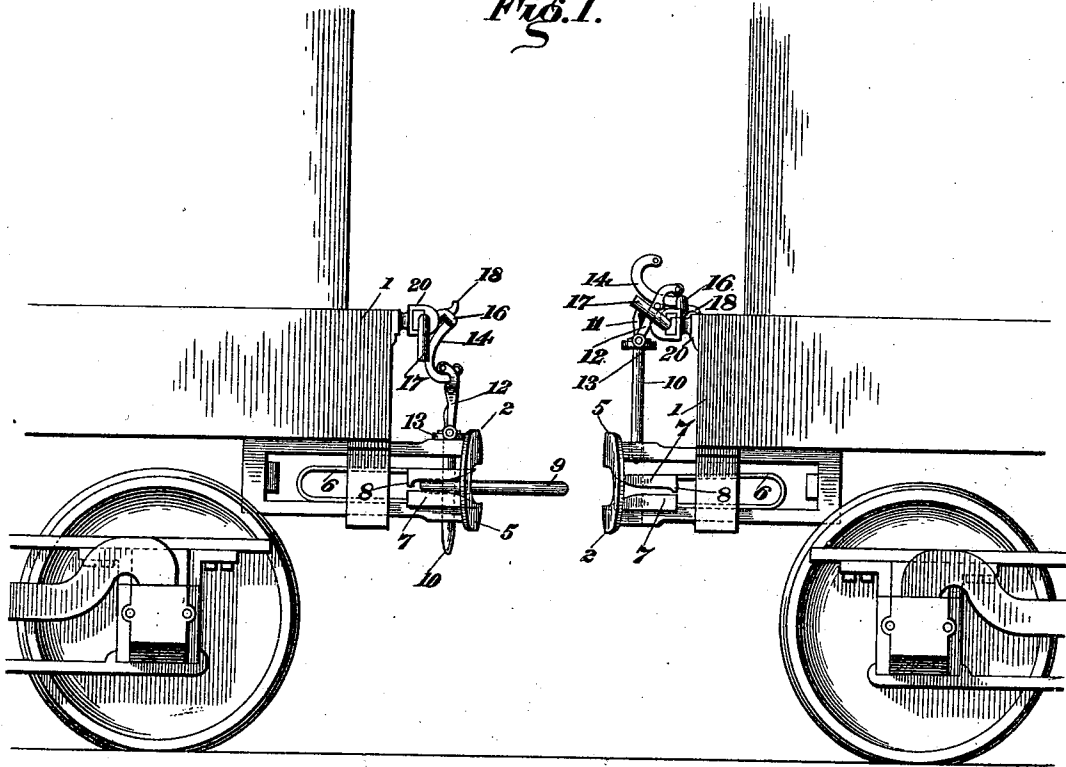


Fig. 4.

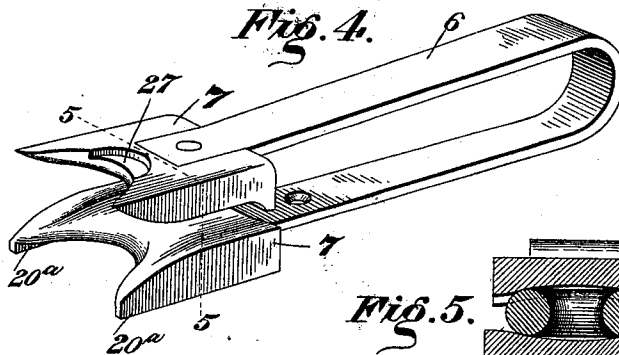


Fig. 5.

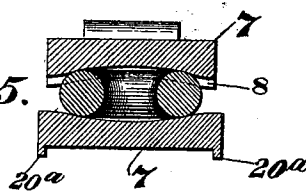
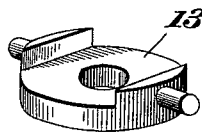


Fig. 6.



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S. L. DENNEY.
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2 Sheets—Sheet 2.

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Fig. 2.

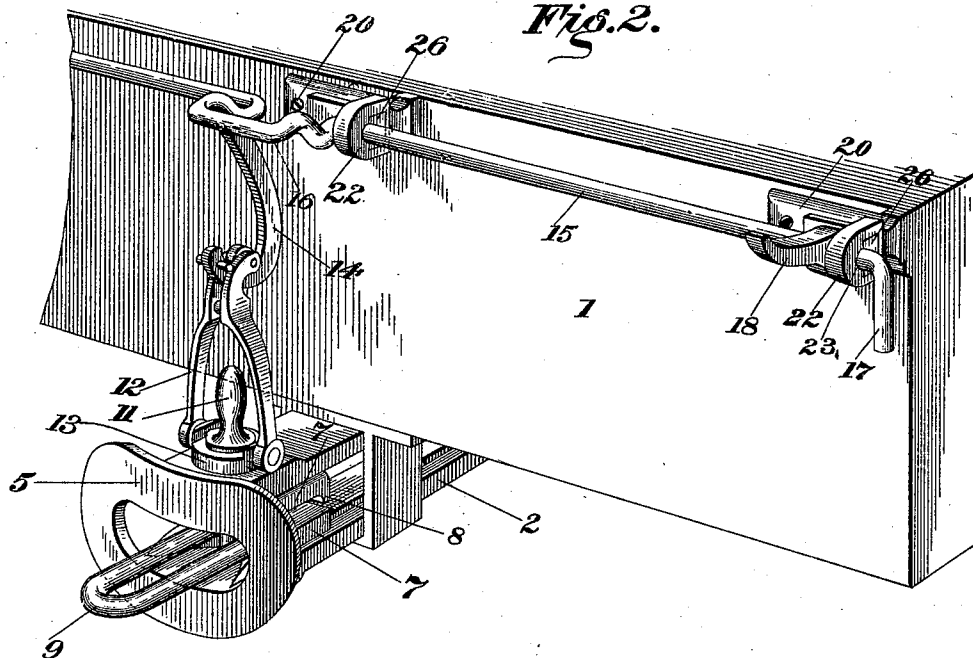


Fig. 7.

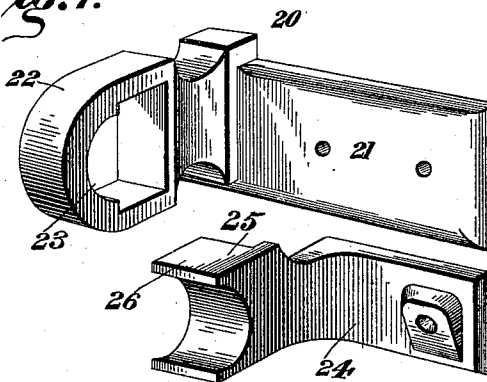
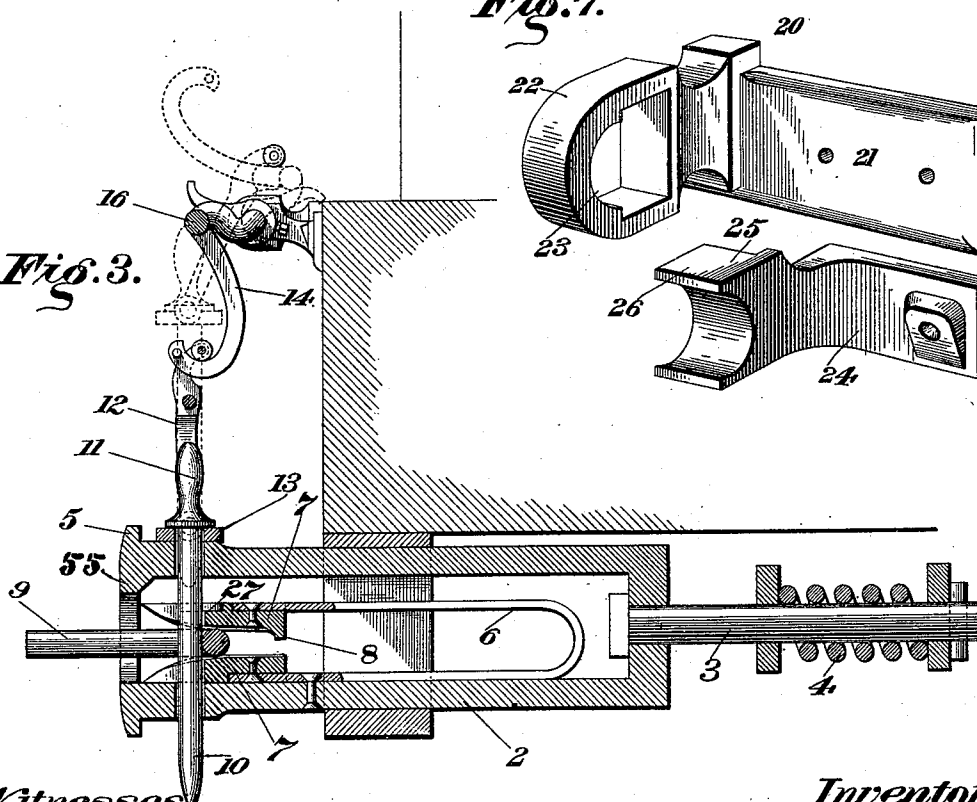


Fig. 3.



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UNITED STATES PATENT OFFICE.

SAMUEL L. DENNEY, OF RISING SUN, MARYLAND.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 510,903, dated December 19, 1893.

Application filed October 14, 1893. Serial No. 488,122. (No model.)

To all whom it may concern:

Be it known that I, SAMUEL L. DENNEY, of Rising Sun, in the county of Cecil and State of Maryland, have invented certain new and useful Improvements in Car-Couplings; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form part of this specification.

This invention has for its objects to provide an improved car coupler, which will be entirely automatic in its action in coupling, after the link is properly adjusted, and which can be operated from either side to uncouple the cars, thus doing away with the necessity of the train men passing between the cars in coupling and uncoupling, and the danger to life and limb, ordinarily, attendant thereupon. The above mentioned objects are attained by the means illustrated in the accompanying drawings, in which—

Figure 1 represents a side elevation of a portion of two cars showing my improved coupling ready to couple, and all the parts in their proper position to effect the same. Fig. 2 is a perspective view of the draw-bar showing the pin lowered in connection with the link lifting devices. Fig. 3 is a central longitudinal sectional view of the draw-bar and link lifting devices. Fig. 4 is a perspective view of the spring jaws. Fig. 5 is a detail sectional view on line 5—5 Fig. 4. Fig. 6 is a detail perspective view of the swivel collar. Fig. 7 is a similar view of one of the improved brackets.

Referring to the drawings:—The numeral 1 indicates one end sill of a car, and 2 the draw-bar thereof, which is secured at its rear end to the draft-bolt 3, having a spiral controlling spring 4 surrounding it in the usual manner. The said draw-bar consists of a metallic frame having two parallel upper and lower sides connected at the rear, as shown, and provided at the front end with a flange 5, which is convex on its forward face as usual and is provided with a central aperture for the passage of the coupling link, the aperture being approximately oval in shape for the necessary play of the said link. The lower edge of the aperture in this flange is flush with, or nearly so, the floor of the draw-bar,

so that a shield or lip 55 (best shown in Fig. 3) is formed at the front of draw-bar, the object and office thereof being to prevent a link entering the draw-bar from passing over or above the upper arm of the link holder therein, hereinafter described.

The numeral 6 indicates a leaf spring formed of a flat bar of elastic metal, bent at or about midway between its ends, so as to form two parallel arms as shown. The said spring is located within the draw-bar, and is of such length as to permit the nut at the forward end of the draft-bolt to set behind it, and of such vertical dimensions as to permit the upper end to yield to the coupling link, to permit it to be properly inserted and held. The forward ends of the spring are provided with jaws 7, which are preferably made separate from the springs and riveted or otherwise suitably attached thereto. The jaws are curved at their forward ends, to form recesses through which the coupling pin passes; the edges of the recesses being beveled as shown to guide the link inward between the jaws, and to permit the proper play of the said link when the cars are moving. The jaws on their contiguous faces are slightly concaved as shown, to conform to the rounded shape of the links and properly guide and hold them. At the rear of the upper jaw, is a downwardly extending flange or projection 8, which serves as a stop, to check the movement of the link when it meets with any slight resistance in entering. The said flange is beveled at its forward side so as to permit the link to elevate and pass it when any undue pressure is brought to bear upon said link and thus prevent breakage or injury of the parts of the coupler.

The coupling link is designated by the numeral 9 and is of the usual construction.

The numeral 10 indicates the coupling pin which is provided with a shoulder and head 11 at its upper end. The shank or lower portion of said pin is adapted to pass through vertical openings, in the forward part of the draw-bar, and through the curved recesses at the forward ends of the jaws, so as to hold the link when the cars are coupled.

The numeral 12 indicates a stirrup which has swiveled between its lower ends an annulus 13. The lower portions of the stirrup di-

verge from the upper portion which is contracted, so that said lower portions may embrace the annulus before mentioned, the sides of the contracted parts being parallel, and
 5 virtually forming a slot, through which the arm 14 of the pin elevating lever 15 plays, as more fully hereinafter explained. The lever is of peculiar construction, consisting of a
 10 bar or shaft having a semi-circular crank or bend 16 midway between its ends, the said ends being provided with crank arms 17, which are at right angles to the central bend just before mentioned.

In order that the crank lever may work
 15 with accuracy, in dropping the pin by the impact of the cars on coupling, the crank or bend 16 should rest just behind its vertical dead center when raised. To effect this the said bend or crank is curved forwardly, then
 20 downwardly and then forward again at its center, the arms of the bend or crank forming an ogee curve, approximately, as shown in Figs. 2 and 3, so that when the said crank is up it will fall just back of a vertical plane
 25 taken longitudinally through the shaft of the coupling pin operating lever.

The numeral 18 indicates an adjustable stop secured by a set screw to the coupling pin operating lever, which bears against the edge
 30 of the car sill when the pin is elevated and limits the backward movement of said lever. The arm 14 is in the shape of a cycloidal curve, and its lower end rests between the parallel portions of the upper end of the stirrup when the coupling pin is down, and is so
 35 arranged as to ride under the upper portion of the stirrup on a friction roller journaled therein and in its movement, raise the pin in a nearly vertical plane, and drop it similarly
 40 when depressed, so that it will not bind at either movement, and thus insure its proper operation at all times.

The improved coupling lever, to insure the proper strength is preferably made in one
 45 piece, and owing to its construction, it is impossible to mount it in the ordinary cylindrically bored bearings, on account of the cranks at the ends. To obviate this difficulty a peculiar bearing is employed in connection with my improved coupling, consisting
 50 of a bracket 20 having a flat base 21, which is adapted to set against and be secured to the lower sill of the car as shown in the drawings. The projecting arm 22 of said
 55 bracket is provided with a semi-circular bearing 23 for the journals of the shaft of the coupling lever, and with a rectangular recess opening into said bearing, space, as seen in Fig. 7 of the drawings.

The numeral 24 indicates a supplementary bracket which is employed in conjunction with the bracket 20 just above mentioned. This last mentioned bracket, has a projecting
 60 arm 25 somewhat shorter than the projecting arm 22 before mentioned and the said projecting arm 25 has a lateral extension 26 which is of a shape and size to fit the rectan-

gular recess in the projecting arm 20. The
 extremity of the projection 25 on the supplementary bracket is provided with a semi-cir-
 70 cular bearing, corresponding to semi-circular bearing in the projection of the bracket 20 before mentioned. The rectangular recess in the said bracket 20 permits the crank on
 75 the shaft of the pin operating lever to be passed through it after which the supplementary bracket may be set in place, completing the bearings for the journal of the
 80 shaft of the pin operating lever. The upper jaw of the spring may be provided at the center of its curved forward edge, with a ledge
 or shelf 27 upon which the lower end of the coupling pin may rest, when said pin is elevated and in position to be dropped. The
 85 lower jaw of the spring, at each side is provided with a downwardly projection flange 20", and these flanges embrace the lower arm of the draw-bar at each side so as to hold the
 spring truly in line, when in position in the draw-bar.
 90

Having thus described the construction of my invention I will now proceed to describe its operation. To arrange the parts for coupling, the pin is raised, by turning the coupling lever until the parts are in the position
 95 shown in Fig. 2 of the drawings. The coupling link is then inserted through the aperture in the flange at the outer end of the draw-bar and forced back, between the jaws of the
 100 spring, so as to be held thereby. The resiliency of the spring permits the link to be thus inserted and causes the jaws to hold it with a sufficient grip to keep the said link in position to enter the draw-bar of an approaching
 105 car to be coupled. When the two cars abut, the shock of the impact is sufficient to trip the coupling lever, so that the gravity of the pin will cause it to drop through the opening in the draw-bar and the recesses at the forward
 110 edges of the jaws and through the coupling link, automatically, and thus connect the cars. To uncouple, the pin is raised by means of the coupling lever as at first mentioned. The recesses at the forward end of the jaws
 115 serve to guide the pin to its seat when the cars come together with unusual force, and prevent it from being thrown out of line with the lower opening in the draw-bar.

It will be seen that by the construction of my improved coupler, the coupling is entirely
 120 automatic, and that the train-men incur no danger whatever in manipulating the coupling devices.

While it is preferable to have the improved coupling applied to all the cars of a train or
 125 railway system, it will be seen that one car equipped with the improved coupler, may be employed and all the advantages of my said improved coupler may be secured, when it is necessary to couple with cars of the old construction, as my said coupler will operate in
 130 connection with the ordinary coupler automatically, in the same manner as it would with a similarly constructed coupler. It will

be seen also that by the construction of my improved coupler, a slack between the couplings is maintained, that is impossible in the class or the type of couplings, in which twin interlocking hooks or connections are employed, and hence the parts are permitted to draw together gradually, obviating the shocks which are sustained in such couplings; and which tend materially to breakage and injury.

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

1. A draw-bar provided with a lip, at the upper edge of the opening in its flange, whereby the end of the upper jaw of the link holding device is shielded and the coupling link is prevented from entering above the link holding device in the draw-bar, substantially as specified.

2. The combination with the draw-bar of a car-coupler of a spring having parallel arms, located within the draw-bar and secured to the same the said spring being provided with jaws at its extremity adapted to grasp and hold the coupling link in position to automatically couple the cars, and the upper jaw adapted to uphold the pin prior to the entrance of the link, substantially as specified.

3. The combination with the draw-bar of a car of a spring having parallel arms, provided with jaws, at their extremities, which are curved and beveled at their forward edges as described, to guide the coupling link into and between said jaws, by which said link is held in position to automatically couple the cars, substantially as specified.

4. The combination with the draw-bar of a car-coupler, of a spring having parallel arms provided with jaws at their forward ends, the upper jaw being provided with a beveled flange, to limit or check the inward movement of the link, when a slight backward pressure is applied to said link, and to give and permit the link to pass farther backward when undue pressure comes upon the same, substantially as described.

5. The combination with the draw-bar of a car, and the spring provided with jaws curved and beveled at their forward ends, of a coupling pin arranged to pass through vertical apertures in the draw-bar and the recesses formed by the curved forward edges of the jaws, the stirrup having a swiveled annulus, setting under the shoulder of the coupling pin and the uncoupling lever having a cycloidal crank adapted to play in the upper

part of the stirrup, and provided with crank arms at each end by which it may be operated to lift and drop the coupling pin in the line of a vertical plane, substantially as specified.

6. The combination with a draw-bar, the springs located between and provided with jaws as described, and the coupling pin adapted to pass vertically through openings in the draw-bar and recesses at the front edges of the jaws, of the stirrup, the annulus swiveled thereto and undersetting the shoulder on the pin the operating lever having a crank midway between its ends, the arms of which describe an ogee curve, and the cycloidally curved arms extending from said crank and adapted to ride through the upper part of the stirrup, so as to move the pin vertically, and retain it in a position just back of the dead center of the crank, to permit the jar of impact of the abutting cars to throw the parts in position to drop the pin, substantially as specified.

7. The combination with the draw-bar, having vertical apertures for the coupling pin, and the spring having jaws curved and swiveled at their forward extremities to guide the coupling link between the jaws, of the ledge or shelf formed at the forward edge of the upper jaw, upon which the pin may rest, when elevated, so as to be dropped into its seat when the cars abut, substantially as described.

8. The combination with the crank shaft, by which the coupling pin is operated, of the bracket having a semi-circular bearing and a rectangular space opening into said bearing, and the supplementary bracket having a lateral extension adapted to fit said rectangular space, and provided with a similar semi-circular bearing for the journal of the coupling operating shaft, substantially as and for the purpose set forth.

9. The combination with a draw-bar of a U-shaped spring having one arm secured to the floor of the draw-bar and its upper arm overlying it in position to automatically engage a link as it enters the draw-bar and automatically hold the same in position for coupling, substantially as specified.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

SAMUEL L. DENNEY.

Witnesses:

JAMES R. MANSFIELD,
S. BRASHEARS.