

H. C. LOWRIE.
Car-Couplings.

No. 142,487.

Patented September 2, 1873.

Fig. 1..

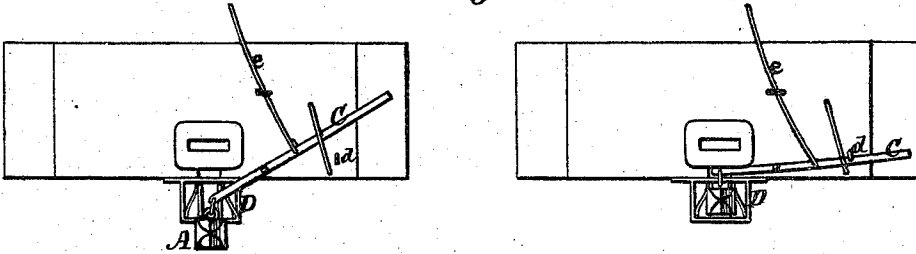


Fig. 2

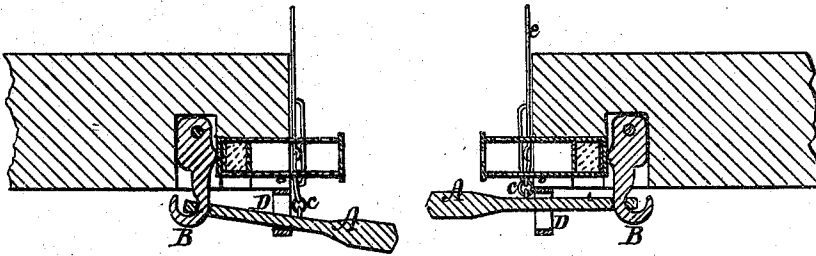


Fig. 3

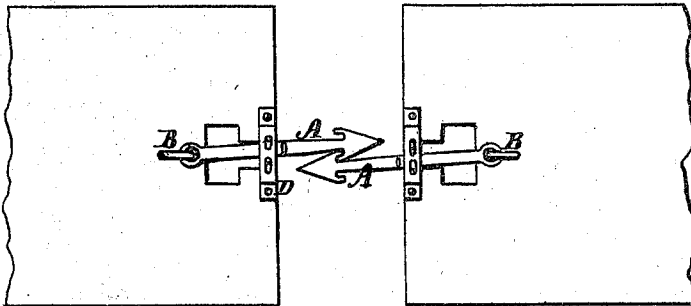


Fig. 4.

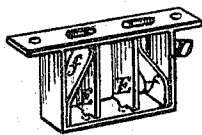
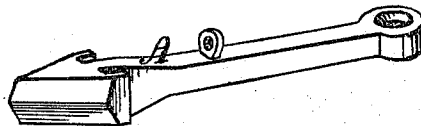


Fig. 5



Witnesses.
Phil. H. Barnes.
G. B. Stenz

Inventor
Harvey C. Lowrie.
By *Wm. Wood*
Attorney.

UNITED STATES PATENT OFFICE.

HARVEY C. LOWRIE, OF FORT WAYNE, INDIANA.

IMPROVEMENT IN CAR-COUPPLINGS.

Specification forming part of Letters Patent No. **142,487**, dated September 2, 1873; application filed May 2, 1873.

To all whom it may concern:

Be it known that I, HARVEY C. LOWRIE, of Fort Wayne, in the county of Allen and State of Indiana, have invented certain new and useful Improvements in Car-Couplings.

My improvements relate to the general class known as automatic couplers, and to that particular class which employ two single or two double barbed couplers, and which couple automatically by the lateral movement of the heads of one or both coupling-bars, and which are uncoupled by the dropping of either head. My invention consists in suspending barbed couplers, which are arranged to couple automatically by a lateral movement from the end of a coupling-lever by means of a chain or its equivalent, whereby either coupler may be dropped; and, by the gravity of the bar alone, effect a complete uncoupling of the heads; also, in so combining the coupler-shanks with a pendent lever, and attaching the same to the frame of the car, that the line of draft may be located above the plane of the coupler-heads, and at any desired distance therefrom; further, in providing the guiding-frame, which, in a measure, controls the coupling-bars, with guiding-plates of peculiar and novel construction; and, also, in the peculiar construction of the faces of the coupler-heads, whereby the objectionable contact of the front edges may be practically obviated; and I do hereby declare that the following specification, taken in connection with the drawings furnished and forming a part of the same, is a clear and accurate description of my invention.

Referring to the drawings, Figure 1 represents, in end view, a portion of two cars which are provided with my improved couplers. The right-hand car has its coupler in operative position. The left-hand car has its coupler dropped as if uncoupled. Fig. 2 represents my couplers in longitudinal vertical section. Fig. 3 represents the same in top view. Fig. 4 represents, on an enlarged scale, the guiding-frame detached. Fig. 5 represents, on an enlarged scale, one of the coupler-heads.

A denotes the coupler-bar. Like others of its class, its head may be provided with two barbs or hooks, so as to operate by contact with either side, or it may have a single barb

or hook, and be arranged so that it can vibrate laterally in but one direction. When the double barbs or hooks are employed, the heads must of course be free to vibrate laterally in both directions, in order that they may engage with each other on either side. In order to obviate the possibility of the injurious meeting of the front edges of the hooks, I construct them with a central ridge or projection, *a*, which extends longitudinally on both sides from the front edge to a point near the barbs or hooks, and on a line midway between the upper and lower surfaces of the heads. The front edge and the sides of the head recede from this projection both above and below. It will be seen that the front edges can only meet by contact of the central projecting portions, and that the slightest jar would throw them apart, should such a meeting occur, and all objectionable contact be thereby practically obviated. The outer side lines of the heads adjacent to the barbs or hooks will preferably be without any vertical or lateral curves, so that when coupled the sides of each engaging-hook may be in close contact and parallel with the sides of the shanks of the coupler-bars, as shown. Although the angular edges and faces *a'* are preferable to mere curves, I am aware that the latter will effect approximately desirable results. B denotes a draft-hook, to which the shank of the coupler-bar is secured in such a manner that the bar can freely vibrate laterally and vertically at its head. The draft-hook can be made with varied form, and may be either secured directly to the frame of the car, to an ordinary draw-bar, or, as shown in the drawings, it can be made in the form of a pendent lever which is suspended from the frame of the car, and arranged to bear against the rear end of a spring draw-bar and bumper of the usual construction. The lever may also be made to engage with a block secured to the frame of the car and occupying the same relative position as that occupied by the rear end of the draw-bar. It will be seen that the line of draft, when so applied, is coincident with the draft-line of the draw-bar. C denotes the coupling-lever. It is mounted on a fulcrum-stud which projects from the edge of the platform or frame of the car. To its inner end the coupling-bar

at the rear of the head is attached by means of a link or chain, *c*. A catch, *d*, located on an adjacent portion of the car, is provided for engaging with the outer or free end of the coupling-lever, and holding it down, when the coupler-heads are in operative position. On cars which have no platforms this catch will be placed on the end of the car, near one side. If a car has a platform the catch will be attached to one of the uprights of the platform-railing. On ordinary freight-cars there will be a rod, *e*, which is pivoted to the lever *C* adjacent to the catch, whereby the disengagement may be effected from the top of the car.

It will be seen that the coupler-bar is suspended from the coupling-lever adjacent to the head, and that a large portion of the weight of the bar is maintained by the lever, and for that reason the bar, hanging freely from the lever, must be at all times in a position to couple, and, if swung to either side by contact with another head, it will promptly assume its former position after the hooks on the heads have passed each other. Desirable results can therefore be attained without the use of lateral or other springs, on account of the tendency of the suspended bar to maintain at all times its proper operative position.

From the fact that my coupler is uncoupled by the dropping of one of either of the engaged heads, I am enabled to bring the upper surfaces of the shanks within a short distance of the frame of the car, and thereby, under all circumstances, to locate the line of draft closely adjacent to the draft-line in ordinary draw-bars. In this connection I will state that I am well aware that single and double barbed or hooked couplers have been heretofore employed and arranged so that they could couple by lateral movement and uncouple by a lift of either of the heads; also, so that they could couple by a vertical movement and be uncoupled by the lifting of one head or the dropping of the other head; and also that single-hooked couplers have long been proposed, which were mounted in boxes swinging on lateral pivots and arranged to couple by a lateral movement and uncouple by the dropping of the box which contained the coupling-bar. I am not aware, however, that prior to my invention coupler-bars capable of coupling by a lateral movement and of being uncoupled by dropping either one of the engaging heads, were ever so suspended that they could move freely laterally, and which could, independently of the portion of the car to which they were immediately attached, be dropped below the coupling level.

It will be seen that to uncouple, it is only necessary to release the lever from its catch, and that the weight of the bar will cause it to drop and be disengaged from its fellow.

In applying the coupling-levers, each pair will be so placed that they will be accessible—one on each side of the train—at every coupling, so that uncoupling may be effected on either side. It will sometimes occur that the

draft will be on the heads at the time that it is desirable to uncouple them. The lever may readily be detached from its catch by proper manipulation, and the brakeman can then leave the spot to attend to duties elsewhere on the train, and as soon as the engine releases the strain the head will promptly fall.

In uncoupling heads which require the lifting of one or the other, the man must stand until the strain thereon is taken off, and then he must raise and secure the head in position.

In all couplers which uncouple by an upward vertical movement, the coupling-line must of necessity be so far below the adjacent portion of the car next above, as to admit of the raising of the head, while with the drop movement the heads can be brought almost into contact with the under side of the car-frame, and by that means the line of draft need be but little below the usual line.

My improved coupler can be applied to cars now using the ordinary link-bumper. It is of great practical value to have an improved or new coupling capable of being attached to cars without radically interfering with the link-bumpers and draw-heads, for then either one of the two may be used in case the other should be disabled.

It will readily be seen that my couplers in no manner need interfere with the link-bumper, and as a bumper is essential with all kinds of couplings, and as link-bumpers are as inexpensive and as effective as any other, it will always be desirable to use them conjointly with my coupling, so that a connection may be effected between cars provided therewith and those having the link-bumper only. Under no circumstances need the line of draft on the coupler-heads be more than, say, five or six inches below the draft-line of the link-couplers, and when applied to the draw-bar, as shown in the drawings, both lines are practically on the same level.

In order that the lateral movement of the double-hooked coupler-bars may be confined within certain limits, and more especially to allow the single-hooked bars to vibrate in but one direction, I have devised a guiding-frame of novel construction, as shown in Fig. 4.

D denotes the guiding-frame. It is provided with flanges at its top for securing it by bolts to the under side of the frame of the car. The guiding-plates *E* are each provided with an axial pivot at their lower ends, which is loosely fitted to an eye in the bottom piece of the guiding-frame. At their upper ends a similar axial pivot is loosely fitted to a longitudinal slot in the upper part of the main frame. These guiding-plates, although confined at the bottom to the eyes which receive their pivots, are free to separate laterally at their upper ends, and, whether vertical or inclined, they can freely rock on their axes. On the outer sides of the guiding-plates the flat curved springs *f* are so secured to the main frame near the bottom that their upper ends are closely adjacent to, but

not in forcible contact with, the plates E near their upper ends. The space between the coincident faces of the guiding-plates is such that the shank of the coupling-bar, near the rear of the head, may hang loosely without contact therewith. When the coupler-head is dropped the guiding-plates prevent it from swinging to and fro. When the head is raised and ready for coupling the bar is free to swing to and fro within certain limits; but when any undue lateral movement occurs the bar comes in contact with the guiding-plate, which, backed up by its spring, forces the bar either back into its original position, or maintains a constant pressure against it. The springs are so set that they are under no continuous strain, and are, therefore, but little liable to injury or wear. By being firmly set at the foot, and with a broad bearing at the top, the spring *f* exercises its force not only flatwise against the guiding-plate, but also presses against either edge of the plate if the latter be rocked on its pivots. When fitted for the single-hook coupler but one of these guiding-plates need be employed, as it will only be necessary to have such a yielding guiding-surface on the side of the bar toward which it swings in the act of coupling.

It will be readily seen that when the bars are coupled the bumpers will bear all the strain when pushing; and, if pushing only is to be done, either coupling-bar can be dropped out of coupling-line.

Like other couplers of the class to which my invention pertains, mine will uncouple promptly from any car which leaves the track; for, by any slacking of speed by a car in front, the shooting forward of the car next in rear will readily disconnect the heads.

In arranging the couplers with longitudinal relation to the bumpers, any desired extent of slack draft may be attained, although from two to four inches will ordinarily meet requirements. The depth or length of the recess at the hooks or barbs will constitute the essential slack, with, say, from one-half inch to one inch additional, to insure lateral return movement after the hooks have passed each other.

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

1. A barbed coupler-head, which is secured to a car, and arranged to couple with another head of the same form by a lateral movement, and to uncouple therefrom by a downward movement, in combination with a sustaining coupling-lever and suspending-link connection, substantially as described.
2. The combination of the pendent draft-lever and the coupler-bar with an abutting shoulder, which is connected to, or forms a portion of, the car, and is located in front of and between the upper end of the draft-lever and the point of connection with the coupling-bar, substantially as described.
3. The combination of the spring draw-head with the pendent draft-lever and the coupling-bar, substantially as described.
4. The guiding-frame, with one or two vertical guiding-plates and their actuating springs, substantially as described.
5. The double-barbed couplers, having angular faces *a'* on the front edges and sides, substantially as described.

HARVEY C. LOWRIE.

Witnesses:

H. MIESE,
L. M. HAMILTON.