(No Model.) 2 Sheets—Sheet 1.

J. COUP.

CAR COUPLING.

No. 384,193. Patented June 5, 1888.

Fig. 1.

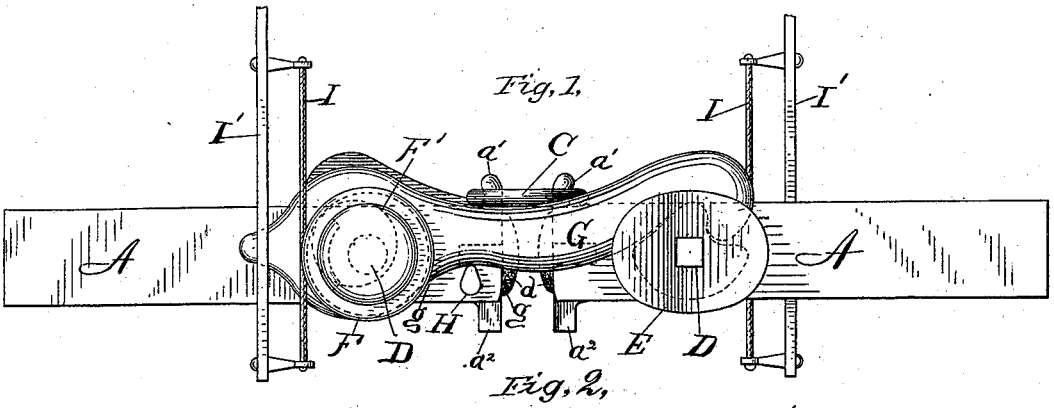


Fig. 2.

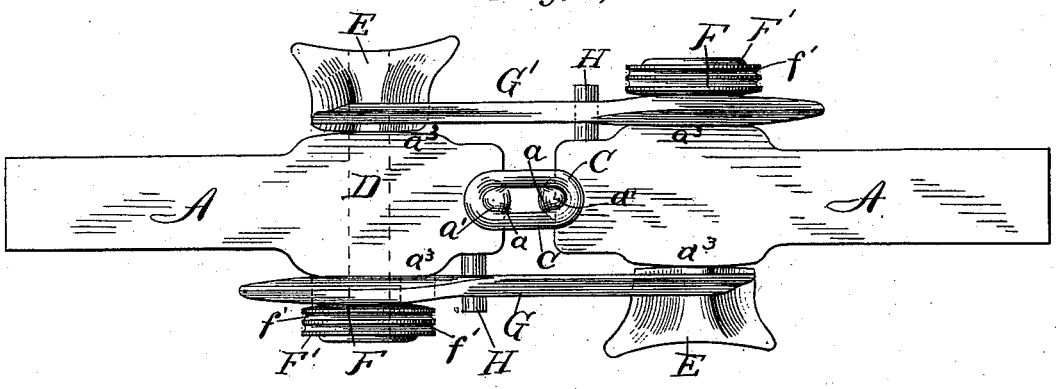


Fig. 3.

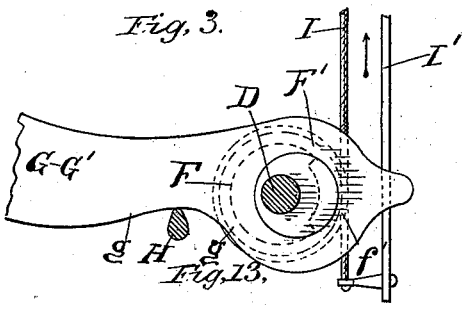


Fig. 13.

Fig. 4.

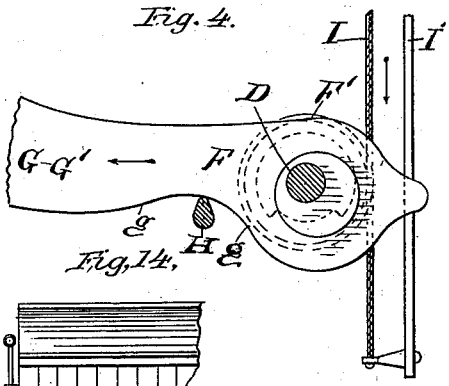
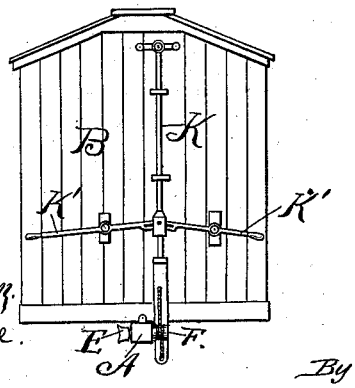
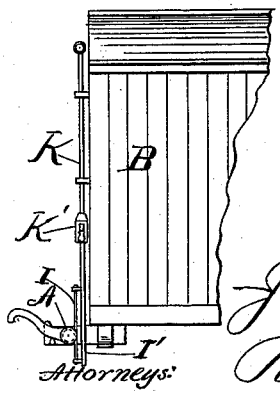


Fig. 14.





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By Richards & Co.
Attorneys.

(No Model.) 2 Sheets—Sheet 2.

J. COUP.

CAR COUPLING.

No. 384,193. Patented June 5, 1888.

Fig. 5.

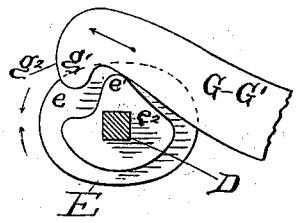


Fig. 6.

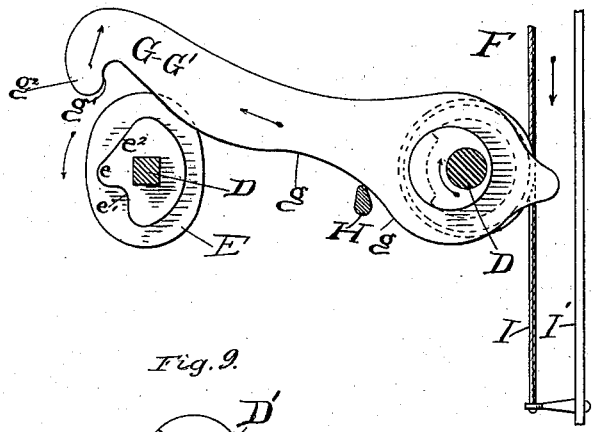


Fig. 7.

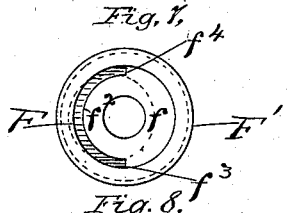


Fig. 9.

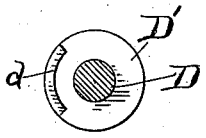


Fig. 8.

Fig. 10.

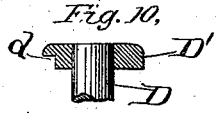


Fig. 11.

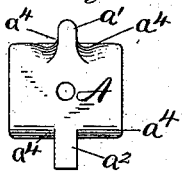


Fig. 12.

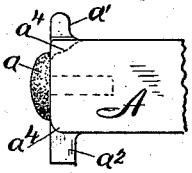
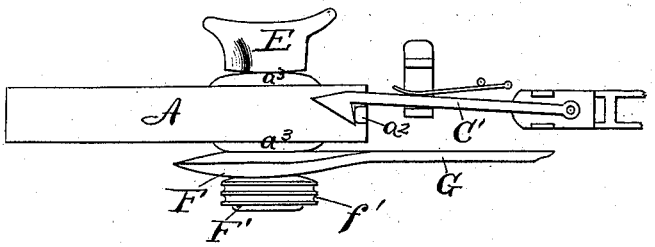


Fig. 15.



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UNITED STATES PATENT OFFICE.

JOHN COUP, OF NEW YORK, N. Y.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 384,193, dated June 5, 1888.

Application filed June 3, 1885. Serial No. 167,488. (No model.)

To all whom it may concern:

Be it known that I, JOHN COUP, a citizen of the United States, and a resident of the city of New York, in the county and State of New York, have invented a new and useful Improvement in Car-Couplings; and I hereby declare the following to be a full and clear description of the same.

The object of my invention is to produce a car-coupling which shall be nearly automatic in its action, which may be arranged to automatically couple or remain uncoupled when two cars are brought together, which may be operated to couple or uncouple from either the top or either side of the car, which will couple with cars having draw-heads of higher or lower elevations, which may be coupled with cars having only ordinary draw-heads, and also with cars provided with other couplings than those described in the subjoined specification.

The invention consists in producing a coupling having a draw-head much similar to those now in use, and provided with a transverse shaft or axle slightly in the rear of the ordinary coupling-pin, and carrying on one of its ends, outside of the draw-head, a cam which holds and operates the attached end of an outside coupling-hook, and on its other end an irregularly-shaped coupling head or cam, to or on which is engaged the hooked part of a similar hooking-piece attached to the draw-head of an adjacent car.

Other features and details of the invention will be explained hereinafter.

The invention will be readily understood by reference to the accompanying drawings, which form a part of this specification, and in which—

Figure 1 is a side elevation of one of the improved couplings with its attached draw-heads. Fig. 2 is a general plan of the same. Figs. 3 and 4 are respectively sectional elevations of the attached end of the improved coupling-link with its rock-shaft or operating-axle rotated up and rotated down, as indicated by the directing-arrows in the said figures. Fig. 5 is an elevational view of a part of the coupling-link and its engaging coupling block or pallet, the position of the parts in this figure being assumed at the point just previous to or just after the engagement of the link and the pallet-block. Fig. 6 is an elevational view of one of the complete coupling-links, its operating-cam with its rotating cord and sliding rod, and the coupling-pallet, also the bottom rest or stop piece, and the sliding seat at the bottom side of the link and resting thereon. Figs. 7 and 8 are respectively a side elevation and a sectional plan of the recessed cam-wheel for operating the coupling-link. Figs. 9 and 10 are respectively an end elevation and a sectional plan of the cam-shaft and its cam for operating the connecting-link. Figs. 11 and 12 are respectively an end elevation and a plan of the end portion of the draw-bar. Figs. 13 and 14 are respectively an end elevation and a side elevational view of a cam provided with the improved couplings. Fig. 15 is a plan view of one of the improved couplings and draw-heads engaged by a coupling of a different make, similar to the "Miller coupling."

The draw-head A is attached to frame-work of the car B in the usual or in any improved manner. The front ends of these draw-heads may be recessed or housed if desired for coupling with the old style of coupling-links; but for the perfect new style they are made with an abutting cushion, a, and projecting side or top and bottom lugs, a' and a^2, as shown in Figs. 2, 11, and 12. The old-style draw-links C may be used with these draw-heads by hooking them over the lugs a', as shown in Fig. 2. The lug a' is rounded on its inner side, so as to fit the inner part of the end of the link C, and the lug a^2 is made more nearly rectangular in section, so as to readily engage with the hook C′ of the Miller or other similar coupling. These draw-heads, with the said common coupling-links or Miller or other similar hooks, form a perfect coupling, which may be used to couple cars to either of the said draw-heads where the other car is not provided with my improved coupling devices, as presently explained. Each of the said improved draw-heads is pierced with a transverse hole some six inches (more or less) from its end, and these transverse holes are fitted with transverse shafts or axles D, the ends of which carry, respectively, the cams E and F, as shown best in Figs. 1 and 2. The shaft or axle D is ro-

tated by the cam F, which is of peculiar construction, as is illustrated by the detail drawings, Figs. 7, 8, 9, and 10. The said cam-piece F is mounted loosely on the shaft D, and has a chambered recess, *f*, in its outer face, as shown in Fig. 8. The cam F is a small eccentric at the inner end of the hub F′, which forms the body of the cam. The periphery of this hub part of the cam is provided with circumferential grooves *f′*, in which an operating cord or chain is seated, as presently explained. A segmental lug, f^2, is formed in the recess *f*, at one side of the said recess, and of a sufficient length to occupy about one-half (more or less) of the periphery of said recess, as shown in Fig. 7. The head-piece D′, which is secured to the end of the shaft D, as shown in Figs. 9 and 10, fits into the recess *f*, above described, on the inner face of the cam F, and a recessed part, *d*, of the said head-piece receives the lug f^2 of the recess or housing *f*. As is shown in Fig. 9, the recess *d* for the lug f^2 is considerably longer than the said lug—say about one-half longer—so as to permit a lost motion of about one-quarter of a rotation of the head-piece D′ within the recess *f* of cam F under proper conditions of position before the ends f^3 or f^4 of the said lug f^2 will contact with the end abutment of the recess *d*. This lost motion is provided for the purpose of allowing the cam F to turn in its socket or seat in the hook or link G or G′, as the case may be, and thereby move the said hook so as to free it from its coupling lug, cam, or pallet E on the adjacent car before the cam E on the opposite end of the shaft D is turned so as to release its coupled hook. The cam F is seated eccentrically in a cylindrical housing or seat in the link G or G′, as the case may be, and the said cam is allowed to rotate freely on the shaft-head D′ and within its seat in the link, except as motion is communicated to the shaft and its head D′ by reason of the contacting of the abutting ends f^3 and f^4 of the lug *f* with the ends of the recess *d*.

A guide or rest, H, is secured to and projects laterally from the side of the draw-bar A and engages under and supports or stops the downward movement of the link G or G′, (as the case may be,) the said link engaging with or resting on the said stop on an inclined or curved and inclined seat, *g g*, formed on the under side of the link. A full equivalent for this arrangement is produced by forming a suitable groove in the inner face of the link-piece and allowing the end of the stop-piece H to engage therein, or by forming a similar groove in the outer face of the draw-head and putting the stop-piece H on the draw-hook and engaging its end in the groove or slot formed on the side of the draw-head. The coupling lug or cam E is constructed in its longitudinal section somewhat in the form of an artist's pallet, as shown in Figs. 1, 5, and 6.

The coupling hook or link G or G′ is made as shown in the drawings, and has a hub or boss at its attached end, which is recessed for the cam F, as above described. The eccentricity of the said cam F is shown in dotted lines in Figs. 1, 3, 4, and 6. The parts are assembled for use in such a manner that when a car is to be uncoupled the first part of the rotation of the cam F throws forward the attached link or hook-piece G or G′, and the act of throwing the said link or hook forward causes it to rise up on the stop or rest H by reason of the sloping seat *g g*, which rests on the said stop or rest-piece, as above explained, and therefore the single act of rotating the said cam F within its seat in the hook or link-piece by means of the eccentricity of the said cam throws the hook or coupling forward, and also causes its free or moving end to rise up by reason of the said inclined seat *g g* and rest-guide H, and this combined upward and forward movement of the free or moving end of the hook or coupling frees it from its engaging cam or pallet E and raises it up therefrom, as shown in the detail, Fig. 6. The coupling lug or cam E has a re-entering notch, *e*, in its operative face, and this forms a somewhat salient angular projection, *e′*, at its extreme working end, and this angularly-projecting end *e′* forms the contact-hook or engagement projection for the engagement of the working face or hook *g′* of the coupling hook or link G or G′ when the said hook or link is coupled up. As above stated, the first part of the rotation of the cam F throws the free end of the hook or coupling-link G or G′ forward and up. This movement disengages the contact-faces *e′* and *g′*, and just subsequent to this movement of the cam F, the lost motion of the said cam on its shaft permitting, the said shaft rotates the cam or coupling-pallet E, so as to turn it over on its end, with the assembling notch and projection *e e′* thrown down and out of the way of the end of the hook or coupling-link, as shown in Fig. 6. When the parts are prepared for coupling together, the cam or pallet E is turned up flatwise with its coupling-notch *e* and projection *e′* placed upwardly, as shown in Fig. 5. This position permits the parts to come together and couple up automatically, the free end of the coupling hook or link having previously been thrown down by the rotation of the cam F in a contrary direction to that above described. The parts readily slide together and automatically couple up by reason of the sloping end g^2 of the bottom side of the free end of the coupling hook or link G or G′ and the rearward downwardly-sloping top face, e^2, of the cam or pallet E.

The sides of the draw-head A have bosses or hubs a^3 at the parts against which the cams F rest, or, what would be an equivalent, re-entering notches at or near the ends or edges of said cams, this construction being made for the purpose of and permitting the coupling links or hooks to swing or play laterally, so as to allow the cars to readily round curves. For the same purpose and to accommodate any undulatory movement of the cars over an uneven

track, the corners a^4 at the ends of the draw-head A under the seats of the link C are rounded off.

Each of the draw-heads A, where these improved couplings are used, is provided with one of the coupling links or hooks G or G′, so that where two of them come together they are put on in rights and lefts and form a perfect double coupling, as shown in Figs. 1 and 2.

The grooves f' above described in the periphery of the hub F′ of the cam F are engaged by operating cords or chains I, which are attached to sliding rods I′, so that by moving the said sliding rods up or down, as required, the said cam-hub and its shaft D may be rotated so as to couple or uncouple a car.

Suitable sliding rods K and levers K′ are shown in general drawings, Figs. 13 and 14, as attached to the car and connected with the operating-rods I. By these or similar devices the operating-cam F and its attached mechanism may be operated from either side or from the top of the car.

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

1. A car-coupling formed of a hook pivoted to the side of a draw-head by means of a transverse shaft and a cam hub-piece which, by its semi-rotation, is adapted to raise the said hook and throw it forward, so as to disengage it from the adjacent car when it is to be uncoupled, substantially as shown and set forth.

2. A car-coupling formed of a curved hook pivoted to the side of the draw-head on an eccentric-cam, and arranged to swing vertically and hook on to a pallet-shaped cam or coupling-block on the adjacent draw-head, substantially as shown and set forth.

3. In a car-coupling, a transverse shaft or rod passing through the draw-head and carrying on one of its ends an eccentric-cam on which is assembled the coupling-hook for connecting two cars, and on the other end of it a pallet-shaped cam for engaging the hooked end of the coupling of an adjacent car, substantially as shown and set forth.

4. In a car-coupling, a cam for actuating or moving the coupling-hook upward and forward, so as to disengage it from the coupling or draw-head of the adjacent car, substantially as shown and set forth.

5. In a car-coupling, a cam for moving and disengaging the coupling-hook, provided with a hub circumferentially wound with a chain or cord for rotating it, so as to operate or release the coupling-hook, as desired, substantially as shown and set forth.

6. A draw-head for coupling cars, provided with a vertically-swinging coupling-hook pivoted to its side by an eccentric-cam and provided with a laterally-projecting stop, on the top of which the said coupling-hook rests, substantially as shown and set forth.

7. A car-coupling consisting of a draw-head, with a vertically-moving hook pivoted to its side by an eccentric-cam and provided with means for operating the said cam and thereby the coupling-hook by means of a system of levers and rods attached to the car and connected with the periphery of the hub of the cam by cords or chains wound circumferentially thereon, substantially as shown and set forth.

8. In a car-coupling, a coupling piece or cam in approximately pallet shape adapted to receive and hold the hooked end of a coupling-hook pivoted to the side of the draw-head of an adjacent car, substantially as shown and set forth.

9. A stop or guide-rest and a cam-shaped or sloping seat to engage thereon, applied, respectively, to either the coupling-hook or to the side of the draw-head, so as to cause the free end of the coupling-hook to move into position to couple or uncouple accordingly as it is thrown forward or backward by the actuating-cam, substantially as shown and set forth.

In witness whereof I have hereunto set my hand this 17th day of February, 1885.

JOHN COUP.

In presence of—
WM. E. RICHARDS,
DANIEL R. GARDEN.