(No Model.)

J. COUP & W. B. & M. H. RICE.

CAR COUPLING.

No. 304,078. Patented Aug. 26, 1884.

Fig. 1.

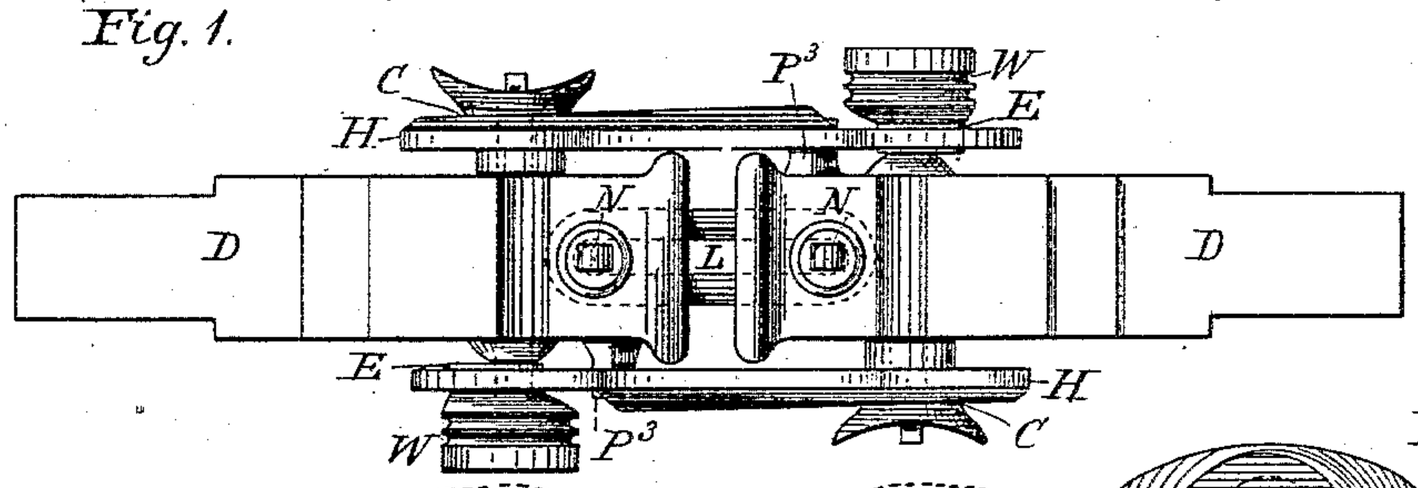


Fig. 2.

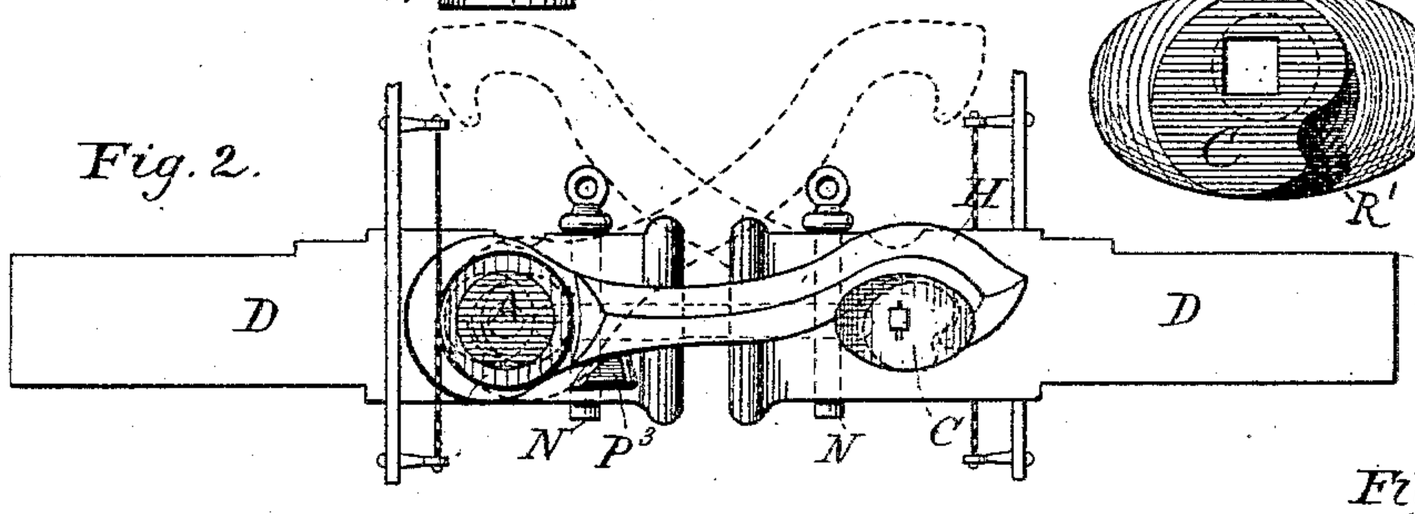


Fig. 9.

Fig. 4.

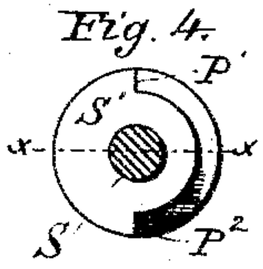


Fig. 3.

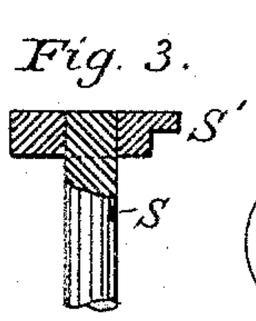


Fig. 8.

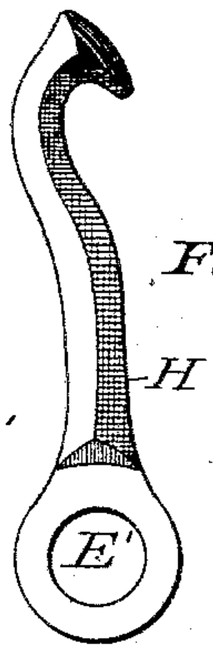


Fig. 7.

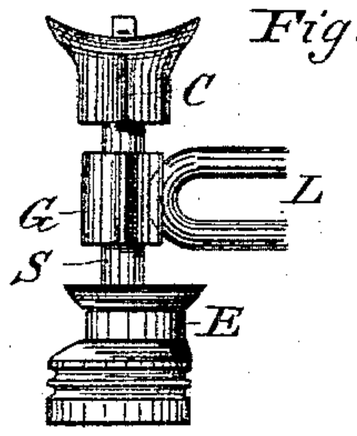


Fig. 10.

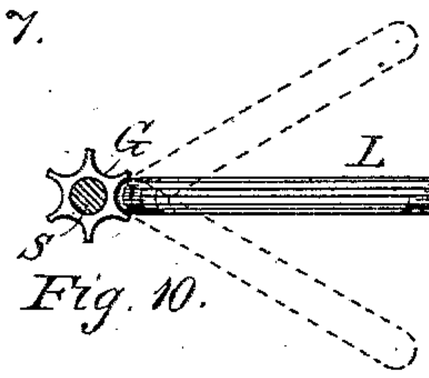


Fig. 6.

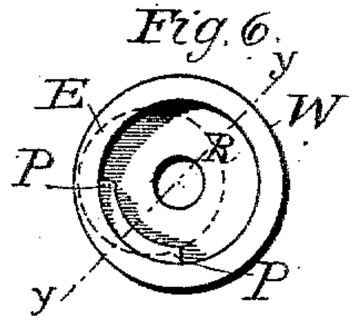


Fig. 5.

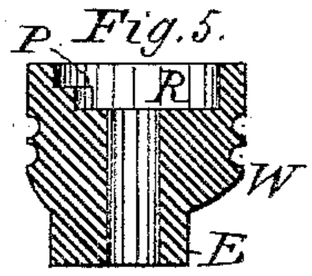
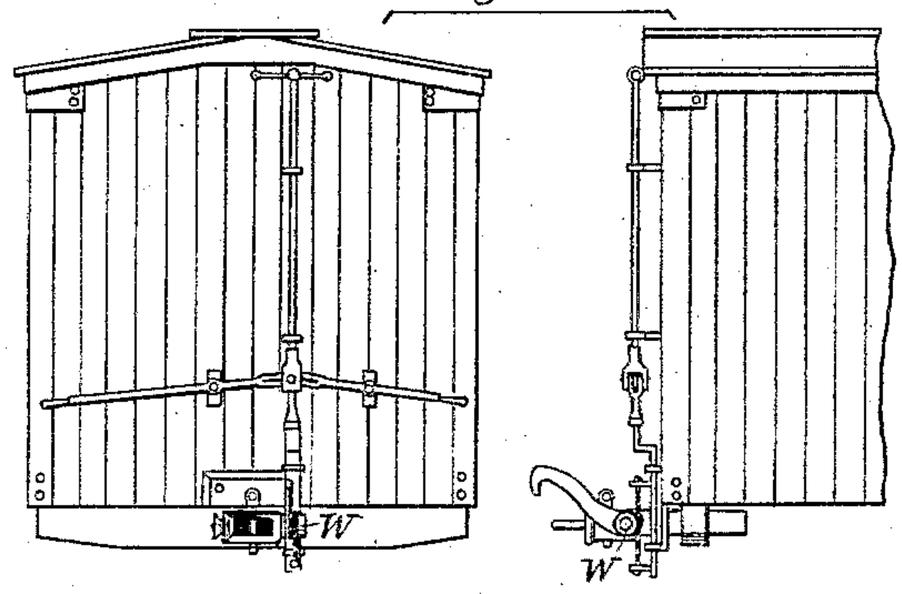


Fig. 11.



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UNITED STATES PATENT OFFICE.

JOHN COUP, OF CLEVELAND, OHIO, AND WILLIAM B. RICE AND MERRIT H. RICE, OF NEW YORK, N. Y., ASSIGNORS TO EDWARD J. WINSLOW, OF BROOKLYN, NEW YORK, TRUSTEE.

CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 304,078, dated August 26, 1884.

Application filed June 28, 1884. (No model.)

To all whom it may concern:

Be it known that we, JOHN COUP, of Cleveland, Ohio, WILLIAM B. RICE and MERRIT H. RICE, of New York city, N. Y., all citizens of the United States, have jointly invented a new and useful Car-Coupling, for which we have obtained no patent whatever, and of which the following is a specification.

Our invention relates to improvements in car-coupling devices arranged so as to be operated from the sides or top of the car, to engage or couple and to disengage or uncouple, certain parts of which operate at certain times automatically for these purposes; and we employ a system of double hooks for coupling the adjoining ends of the two cars, which may be disengaged from either car.

We attain the objects of our invention by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a top view showing two draw-heads with associated parts engaged. Fig. 2 is a side view of the same. Fig. 3 is a sectional view of the shaft and shaft-head cut on line *x x*. Fig. 4 is a plan view of the shaft-head. Fig. 5 is a sectional view of the recess, combined wheel or pulley, and eccentric, cut on line *y y*. Fig. 6 is a plan view of the same. Fig. 7 is an elevation of the eccentric, wheel, shaft, cam, grooved ring, and part of a link. Fig. 8 is a side elevation of the hook. Fig. 9 is a plan view of the hat-cam. Fig. 10 is a view of the grooved ring and link, and Fig. 11 is a view of the devices for operating the coupler from the sides and top of the car.

Similar letters refer to similar parts throughout the several views.

In our invention provision is made for coupling cars provided with our coupling devices by means of a plain link and pins of the common kind alone.

We provide each draw-head D with a hook, H, and with an engaging-cam, C, of a peculiar form for engaging with the bill of the hook H of the opposite car and draw-head. The hook and the cam are operated together on or by means of a shaft, S, a shaft-head, S′, and an intermediate device, consisting of an eccentric, E, a wheel or pulley, W, and a projection or shoulder, P, located in the recess R, which is placed in an extension of the pulley W or of the eccentric E, or of both, and receives the shaft-head S′, as shown. The shaft-head S′ is cut away on the inside so as to present two shoulders or projections, P′ and P², at the extreme opposite sides of the shaft-head and shaft, for contacts with the projection P in the recess R, thereby causing the motion of the shaft and cam C back and forth to and from the engaging position. This part of the shaft-head is cut away just one-half of its circumference, and the other half may be left solid, while outside of the same is a sort of cap-piece, A, which is intended to fill or close the recess R, and the projection P occupies a quarter of that circumference.

The eccentric E works in the eye E′ of the hook H, and with the pulley or wheel W, and its extension turns freely on the shaft S, except as limited by the projections or stops P, P′, and P², for the purpose of operating the hook H and the cam C. The cam C and its relations to the stops and eccentric upon the opposite end of shaft may be described as follows: As looked at from its inner end it is approximately a heart-shaped or palette-shaped cam, as looked at from its outer end in plan and vertical view it is a hat-shaped cam, and its function is to engage or be engaged by the bill of the hook H of the opposite car. This cam C is provided with a square hole located eccentrically, to be placed upon a reduced squared end of the shaft S, which is also located eccentrically to the longitudinal center of the shaft S. The bill of the hook H in engaging strikes and rides over the cam C, and drops its bill into the recess R′ of the cam C, for the purpose of retaining the hook H in place to do its work in drawing the car, the point of the hook engaging the cam below the center of the shaft S. The eccentric E, when moved forward one quarter of its normal movement, carries with it the hook H, in the eye E′ of which it moves, and disengages the point of the hook H from the cam C of the opposite car or draw-head D. When it is moved forward a second quarter, the rear end of the hook H is depressed or carried down by the continued movement of the eccentric, the hook forward of the eye resting upon the V-shaped projection P³, and causing the forward end of the hook to rise, and during this move-

ment the stop-contacts in the recess R cause the shaft-heads S′, shaft S, and cam C to turn, the eccentric portion of the cam C, lifting the point of the hook-bill past the center of the shaft S, so that the cars can separate and entirely disengage the coupling apparatus. The stops on the shaft-head should be separated a distance equal to one-half the circumference of the head. The stop P in the recess R should occupy a space equal to a quadrant of the circumference, and the action of the two together should take place during the second quarter of the motion forward or backward, the under side of the hook, between the bill and the eye of the hook, resting upon the V-shaped projection P^3. As the hook is pushed forward by the eccentric E, the forward end of the hook is lifted before the rear end is depressed, as well as afterward. One purpose of this device is to place the hook in such positions that in contact with a stubbing-block or other obstacle the hook will be lifted out of the way, instead of being broken or itself doing damage. The forward side of the bill of the hook H strikes the adjacent side of the cam C in engaging, and, riding over it, the bill drops into the depression R′, which gives this cam the outline of a painter's palette, where it is securely held, since the bill of the hook is made long enough to allow it to drop below the center line of the shaft S, and consequently, when the cam C is turned backward or upward by the action of the eccentric E through the shaft S, the bill of the hook on that side is lifted above the center of the shaft S, and its relations to the cam C are necessarily such as to allow the bill of the hook H to slip off on a slight pull or tendency of the cars to separate, the eccentric E of the same shaft having coincidently pushed forward and lifted or released the hook H, in the eye of which it moves; and, as will be seen, the movement of the eccentric of either draw-head will thus disengage or release both hooks simultaneously. When the brakeman has moved the eccentric of one car—either—and thereby disengaged or uncoupled two cars, he may reverse the eccentric at once, thereby dropping the hook H and restoring the cam C to the positions for engaging automatically whenever a car with similar coupling devices is backed up for the purpose; or he may leave the eccentric and associated parts in the same position, in which case no coupling will take place when the car is or may be backed up—as for pushing the car on a side track. That part which corresponds to the brim of a hat is rounded or beveled, so as to allow for the sidewise motion of the outer end of the hook in turning curves, and the same is true of the parts adjoining the eccentric where it enters the eye E′, which is slightly elongated to give a little freedom of motion to the hook.

On the shaft S we contemplate placing a grooved ring, G, located at or about the center of the shaft S, to receive the end of the link L, held against it by a pin, N, the object being to control the link by the same operating mechanism, so as to raise or lower the outer end of the same in effecting coupling with the adjoining car, which may vary in height above or below it.

The wheel W, stops P P′ P^2, shaft S, shaft-head S′, and grooved ring G control the movements of the link L for these purposes, the hooks H and cams C being out of use meantime. The wheel W has a short motion or partial revolution in performing the functions described.

Instead of the wheel W and a band or chain, which we here show, we contemplate the use of a sprocket-wheel and chain, or any known device or devices, for operating the same and giving the required motions. Among these we may cite those shown in the Letters Patent of the United States No. 264,441, in car-coupling, granted to John Coup, one of the applicants herein, September 19, 1883, by means of which the coupling or uncoupling may be effected at either side or at the top of the car; or the device shown in Letters Patent of the United States No. 292,538, dated January 29, 1884, may be used for a similar purpose. When the two adjacent cars are coupled, as shown in Figs. 1 and 2, the larger sides of the two eccentrics E occupy the outer sides of the eyes E′ of the hooks H, with the center line of the eccentrics coincident with the centers of the shafts S and the draft-strain center. The two eccentrics are held in this position by or through the point or bill of the hook of the opposite draw-head, the cam C, shaft S, and shaft-head S′ of its own draw-head; and when once coupled the parts will remain coupled until one of the wheels W is moved by means of the mechanism which operates it. The tendency of the draft-strain to turn the cam C out of the coupled position is checked by making the shaft center and the center line of draft-strain coincident.

We claim as our invention—

1. The hook H, provided with the eye E′, the eccentric E, the cam C, and the V-shaped projection P^3, in combination.

2. The hook H, provided with the eye E′, the eccentric E, the wheel W, recess R, shaft S, shaft-head S′, and the projections P P′ P^2.

3. The hook H, eccentric E, shaft S, shaft-head S′, cam C, and the grooved ring G, in combination, in the manner and for the purpose described.

4. The two hooks H, provided with the eyes E′, the two eccentrics E, the two shafts S, the two shaft-heads S′, the two recesses R, provided with the projections or stops P, P′, and P^2, and the two cams C, all in combination with the two draw-heads D, as shown and described.

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