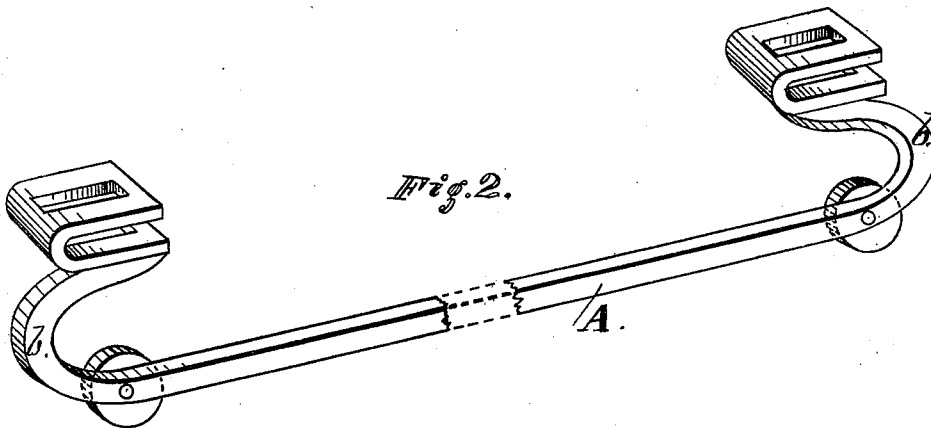
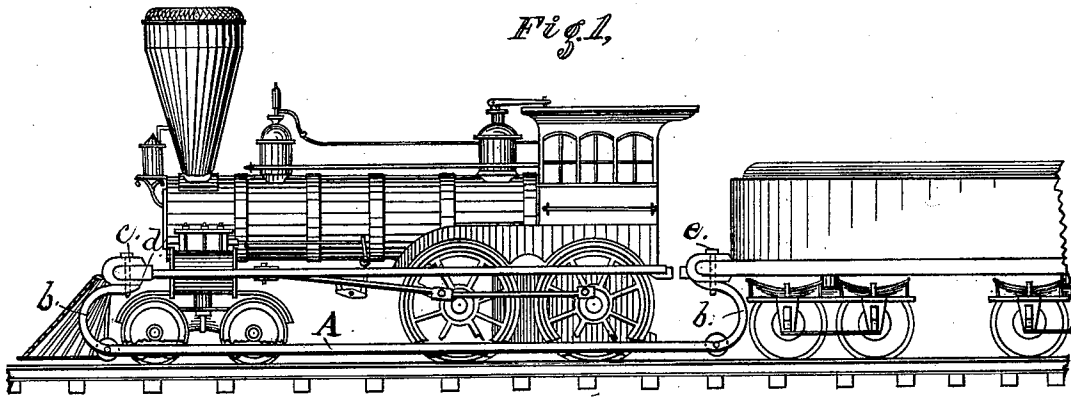


W. HALSTED.
CAR-COUPLING.

No. 177,117.

Patented May 9, 1876.



Witnesses,
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UNITED STATES PATENT OFFICE.

WILLIAM HALSTED, OF TRENTON, NEW JERSEY.

IMPROVEMENT IN CAR-COUPPLINGS.

Specification forming part of Letters Patent No. **177,117**, dated May 9, 1876; application filed February 5, 1876.

To all whom it may concern:

Be it known that I, WILLIAM HALSTED, of the city of Trenton, county of Mercer, and State of New Jersey, have invented a new and useful Safety-Coupling for Cars and Locomotives, which improvement is fully set forth in the following specification, reference being had to the accompanying drawings.

The objects of this invention are to prevent risk of life and limb both in the act of coupling and while the train is running; to lessen the liability of running off the track; to cause the forward end of the locomotive or car to be forced downward upon the track, and thus to prevent its rising and jumping the track, and, in case of the breaking of a wheel or axle, to sustain the locomotive or car, and to permit it to run along without upsetting.

Figure 1 is a side elevation of a locomotive and its tender with my improved safety-couplers applied thereto, and Fig. 2 is a perspective view of one of the couplers on an enlarged scale.

A represents a bar of iron large and strong enough to draw a whole train of cars, two such bars being employed to connect the locomotive to its tender, one on each side of the locomotive, and they are made long enough to reach from the front cross-beam of the locomotive—i. e., the beam to which the cow-catcher and the front part of the boiler are attached—back to the front beam of the engine's tender, as shown in the drawing. These bars are each made alike, and are bent at both ends into the form of a semicircle, as shown at *b b*, of a diameter of, say, from two feet four to two feet eight inches, these bends or curves being toward each other. The forward end I attach by a strong iron bolt, *c*, passing perpendicularly through the transverse beam *d* in front of the boiler, and the rear end I attach by a bolt, *e*, to the front beam of the truck of the engine's tender. This bolt should pass through a slot in the bar A of several inches in length, and of about the width of the diameter of the bolt, so as to permit a certain backward and forward motion, to allow the bar to accommodate itself to any curve of the rails, and the lower or straight part of the bar should be about from eight to twelve inches from the ground or bed of the rail. These bars may

be placed so as to be parallel with each other and with the plane of the wheels—that is, standing in vertical planes—or they may diverge outward at an angle of about fifteen degrees from such a plane, like ordinary sleigh-runners, the lower part of the two bars being, of course, always parallel with each other, and small rollers of from two to four inches in diameter may be attached to the under side of these bars, near their front and rear curves, to facilitate the running of these coupling-bars, in case a wheel should break, or from any other cause a bar should come to the ground. The bars, in such event, whether provided with the rollers or not, acting like the runners of a sleigh, not only to sustain the locomotive, but also to permit it to glide along without breaking down. These bars A, also, by reason of extending from the front end of one vehicle to the front end of the one in advance of it, and in the case of the locomotive being connected with the front beam of the truck on which the boiler rests, and whose ends extend about eighteen inches outside of the rails of the road, it is manifest that any weight attached to such projecting ends must act like a lever to hold the front wheels of the engine down upon the rail, and keep each side of the engine in equilibrium, and to counteract the tendency of each wheel to rise above the flange of the rail.

By the ordinary mode of coupling the locomotive to the tender there is nothing to keep the front wheels on the rails except the mere weight of the front part of the engine; but by my mode of coupling I not only bring to bear upon the front wheels all the weight of the front part of the engine, but, in addition thereto, a great part of the weight of the tender, or of the tender and train, which is attached to it, such added weight acting like a weight, operating upon a lever outside of the wheels, pressing them down upon the rails.

It will be evident that by couplings of this character the whole weight of a train when in motion has a direct tendency to draw the front wheels of the locomotive downward as well as backward, and therefore very powerfully to cause the wheels to adhere closely to the rails, and therefore to counteract any tendency which either of them might have to rise

above the flange of the rail and to jump the track. This same kind of coupling placed between the tender and the baggage-car, and placed between the cars, would have the same tendency to keep the wheels of the cars down upon the track.

Another advantage of this mode of coupling is, that it will prevent the great loss of life occasioned by a prevalent mode of coupling, where the employé of the road has to go between two cars, which are moved toward each other preparatory to being coupled together.

A locomotive cannot be thrown off the track, except by the operation of two distinct forces—the one an upward one to lift the wheels three or four inches high, according to the depth of the flange of the wheel, and the other a lateral force, to deflect them from a right line to a distance greater than the breadth of the top of the rail, whereas, in existing couplers now in use, the traction of a train of cars is ordinarily only by one point or link, and that under the central line of the locomotive; there is nothing whatever to counteract the tendency of the front wheels of the engine to be lifted by any upward force imparted to them, or to be deflected from a straight line or course by any lateral force imparted to them. But it is obvious that with my improvement the locomotive will not have a tendency to rise or to be deflected from a right line; but these tendencies will be effectually counteracted by the iron bar at each side of the car

or locomotive, the pull or draft being all downward and backward upon the forward end of the locomotive.

My improved couplers, when used to couple together passenger or other cars which are not directly coupled to the locomotive, may be made shorter, and then, instead of connecting the forward end of one car to the forward end of another, they may be attached from the forward end of one car to the rear end of the car ahead of it, extending under the platform and under the steps, one end of each such short curved bar A being attached to the outside of the end of the back part of the front car, and to the outside front part of the car behind it.

I claim—

1. The described method of connecting a locomotive to its tender or car by bars reaching from the forward end of the locomotive, downward and under the same, to the forward end of its attached car, substantially as and for the purposes set forth.

2. The coupling-bars A, constructed each with an upward curve, *b*, at each end, and adapted to be adjustably applied in pairs to couple cars together, substantially as and for the purpose set forth.

WM. HALSTED.

Witnesses:

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