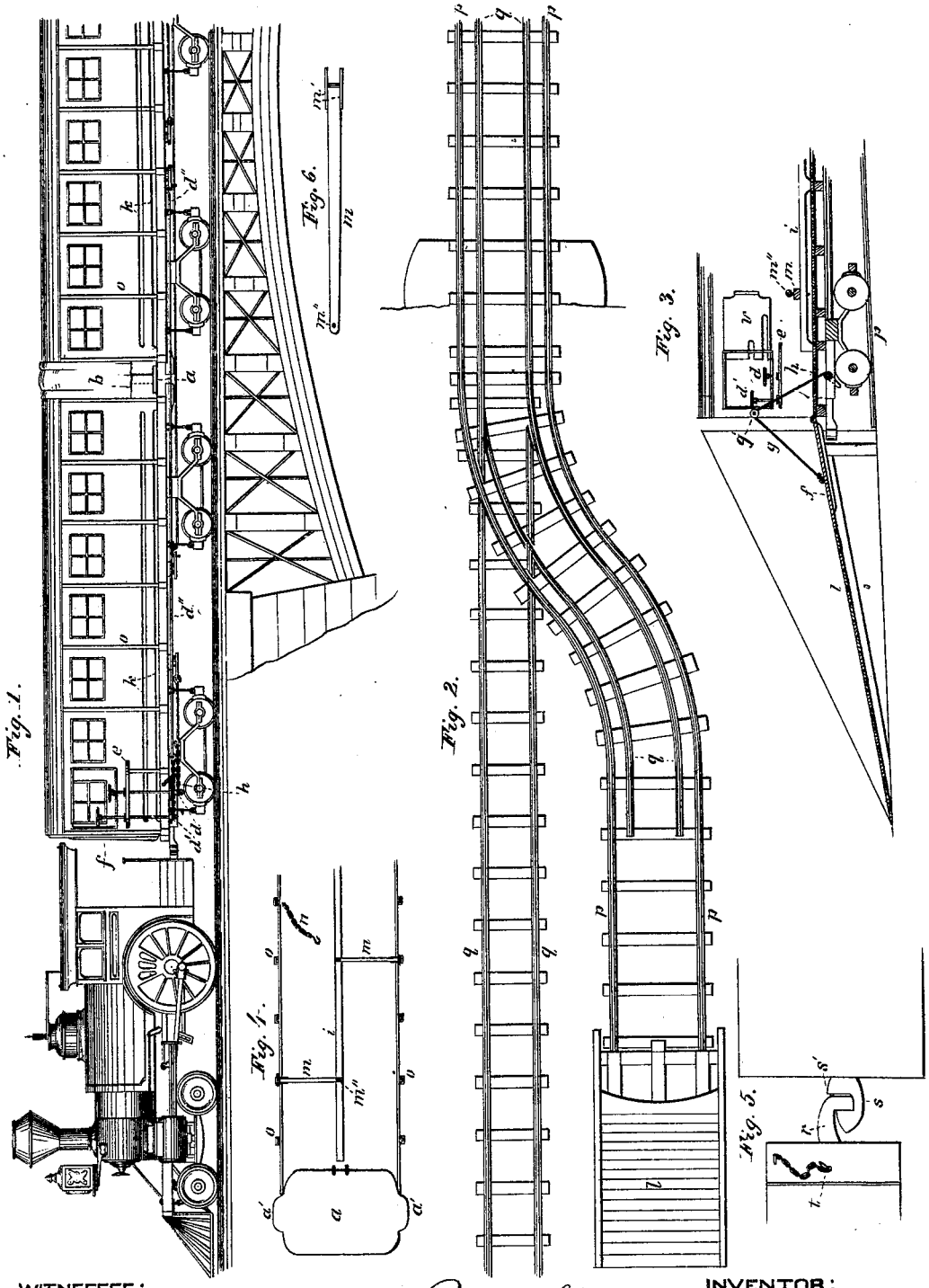
P. P. SHELBY.

Railway-Ferry Cars.

No. 195,957. **Patented Oct. 9, 1877.**



WITNESSES:

Alex. Porter Morse

Story B. Ladd

INVENTOR:

Peter P. Shelby

By Paine and Crafton

Attys

UNITED STATES PATENT OFFICE.

PETER P. SHELBY, OF OMAHA, NEBRASKA.

IMPROVEMENT IN RAILWAY FERRY-CARS.

Specification forming part of Letters Patent No. **195,957**, dated October 9, 1877; application filed May 19, 1877.

To all whom it may concern:

Be it known that I, PETER P. SHELBY, of Omaha, in the county of Douglas and State of Nebraska, have invented certain new and useful Improvements in the Transportation of Wagons, Teams, Live-Stock, &c., across Railway-Bridges; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

The object of my invention is to provide a way by which railway-bridges can be utilized for the purpose of transferring wagons, carriages, teams, live-stock, &c., across the water spanned by the bridge, with the same dispatch and convenience as they are now transferred by ferry-boats. It applies to bridges which are constructed for railroad purposes only, which are not planked, and which have no facilities for general travel.

Such bridges are often so constructed that it is impossible to change them into wagon-bridges, and when such changes are possible the planking and additional wood-work required often increase the danger of destruction by fire.

With the aid of my invention railroad-bridges afford a means of transit which is free from the dangers and interruptions to which a ferry-boat is subject, especially during the winter and spring seasons.

My invention relates to an improved method of transferring wagons, teams, live-stock, &c., across railway-bridges, which corresponds to and resembles the method in common use of ferrying the same across rivers—that is, a car is provided, which may be either a single car or a number of cars so coupled and combined, with the spaces between them covered by bridges, as to make a continuous, unbroken floor from end to end.

The conveyance thus formed may, for convenience, be called a "ferry-car," as it is employed for the same purpose as a ferry-boat, and in a similar manner; and in the following description I will use this term, meaning the conveyance whether composed of one or several cars.

Landings are provided at convenient points near the ends of the bridge, from which the wagons, teams, &c., can be driven onto or into one end of the ferry-car. The ferry-car is backed up to the landing at one end of the bridge; a hinged platform at the end of the car is lowered onto the landing; the teams, carriages, &c., are driven into or upon the ferry-car, as in the case of a ferry-boat; the ferry-car is taken across the bridge to the landing on the opposite side; the front end of the ferry-car is run up to the landing; the drop-platform is lowered upon the same, and the teams, carriages, &c., are driven off.

My invention consists of a ferry-car adapted to the purpose of ferrying teams, carriages, live-stock, &c., across railway-bridges.

It is made, preferably, of two platform-cars covered at the sides and top, and constructed so that they can be closely coupled, with a bridge spanning the space between them, so as to make a continuous, unbroken platform from end to end. Each end of the ferry-car has an apron hinged to the edge of the platform, which is raised and lowered by wire ropes and windlass. When lowered onto the landings at the ends of the route, they form roadways for the wagons to drive onto and off from the ferry-car, and, when raised, they close the ends of the car, either partially or entirely.

The brakes are connected, so that when the ferry-car is made up of several cars combined they can all be operated from either end of the ferry-car; and various devices are introduced for the purpose of locking and securing wagons in their places when in transit, as will hereinafter more fully appear.

The cars are made wide enough (fourteen feet three inches) to accommodate two teams abreast; and to run these wide cars in connection with bridges which are laid with tracks of ordinary width, a broad-gage track of six feet is laid outside of the rails of the ordinary track on the bridge, and diverging from the main track to the ferry-car landings.

My invention further consists of an improved method of operating the ferry-car run-

ning between the landings on a broad-gage track, in connection with the locomotive on the ordinary track, as will hereinafter fully appear.

My invention further consists of an improved coupling for coupling the locomotive to the ferry-car, so that the locomotive, which runs on the main track, on reaching the points where the broad-gage track branches off to the landings, will continue on the main track, and, as the ferry-car, following the broad gage, diverges from the line of the main track, will automatically uncouple itself.

Figure 1 is a side elevation of a ferry-car made up of two cars, as described. Fig. 2 is a plan of a landing and of the tracks leading to the same. Fig. 3 is a longitudinal section through a landing and the end of a car at the landing. Fig. 4 is a plan of a portion of the interior of a car, showing the bridge *a*, which spans the space between the cars. Fig. 5 shows the automatic coupling used between the ferry-car and the locomotive; and Fig. 6, one of the cross-bars, *m*, used to secure the wagons and keep them in place when in transit.

The drawings and the description apply to cars made to accommodate two teams abreast, and, when it is practicable, I prefer to use these large cars; but it may be impossible to run them on some bridges, and the specification applies as well to cars of the ordinary width of ten feet adapted to run on tracks of the ordinary four feet eight and one-half inch gage.

The running-gear structure of the cars is the same as now used for ordinary railway purposes; but I prefer to use car-wheels twenty inches in diameter instead of the ordinary wheels, that are thirty-three inches in diameter, and the trucks are constructed with all the necessary springs, similar to those of a sleeping-car, so as to give the cars a smooth and easy carriage.

The ferry-car is made up of two or more railway-cars, each fifty feet in length, fourteen feet three inches in width, (or ten feet in width for the gage of four feet eight and one-half inches,) and ten feet in height, of clear space between the floor and roof sufficient to accommodate any ordinary load.

The cars are coupled together, and a bridge, *a*, extends from one car to the other, completely spanning the space over the coupling between the cars, so as to make them as one continuous car. The bridge *a* is fastened by means of loops and staples at one end, attached to the floor of one car, and the other end of the bridge rests loosely on the floor of the other car, upon a sheet-iron plate embedded in the floor of the car, to prevent the wearing of the car by friction. The bridge is constructed with curved ends *a'*, Fig. 4, which project slightly beyond the sides of the cars through slits at the bottom of the sides, so that in passing curves there will never be any openings in the floor of the ferry-car between the ends of the bridge *a* and the sides of the cars. The sides of the cars, from the floors three feet upward, telescope loosely into each other about two inches, and the remainder of the space from said points up the sides and across the top is inclosed with canvas or leather *b*, fastened to each car, with sufficient slack to allow room for passing over curves. The cars are coupled together with the strongest possible couplings, and also supplied with safety-chains.

At each end of the ferry-car there is a drop platform or apron, *f*, hinged at the bottom to the end of the car-floor, and raised and lowered by wire ropes *g*, which are attached to the corners or sides of the apron *f*, and pass over sheaves *g'* at the proper angle on the inside of the car down to a windlass, *h*, beneath the car, which is worked by a removable crank placed on the outside of the car, so as to be taken off when in motion; and I intend to counterbalance the weight of the hinged platforms *f* by weights or springs placed at the top of the car, and connected by wire ropes with the outer corners of the same.

The aprons *f* are used for and answer as the ends of the ferry-car when up, and, when lowered upon the landings *l* at the ends of the route, as roadways on which to drive into or out of the ferry-car.

The ends of the ferry-car may be closed by two doors, in place of the apron *f*, hinged at the sides, and swinging outward, so that they will form the sides of the chute when the car is at a landing. With this construction there should be a hinged platform attached to the landing, which can be dropped onto the floor of the car, or else a plank, which can be run out and drawn back to bridge the space between the car and landing.

Two brake-staffs, *d d'*, are attached to the outside of the car near the end, with a foot-board, *c*, five feet six inches above the floor of the car, which projects nine inches on the outside and three inches on the inside of the car. The ratchets project two-thirds on the outside of the car and one-third on the inside, and the dogs are attached to the foot-board on the inside of the car. One of the brake-staffs, *d*, is connected with the brake-rod of the car, to which the staffs are attached, and the other, *d'*, is connected, by a long rod, *d''*, with the brakes of the other car. The brake-rods are connected with horizontal brake-levers attached to the bottom of the car near the sides. By this arrangement all the brakes can be controlled and operated from either end of the ferry-car, and if the cars uncouple the strain on the rods *d''* will apply the end brakes before the strain comes on the safety-chains. An additional rod connecting the brake-levers on the extreme ends can be attached for this purpose, so that the brake-staffs will not be unnecessarily strained.

The opening in the side of the car left for the purpose of operating the brakes is closed by a sliding door, *r*.

The sides of the cars are constructed with two openings, *k k*, running the whole length, each one inch and a half wide, one at the floor and the other two feet therefrom; and windows are placed near the roof, with painted glass, protected by iron gratings on the inside.

The floor of the car is divided by a low division-railing, *i*, about six inches deep, placed in sections, and attached to the floor by means of sockets and stakes.

The cars are supplied with cross-bars *m*, which extend, when in position, from the division-railing *i* to the posts *o* on the sides of the car.

The bars *m* are made with a recess in one end, which receives a post, *o*, and an iron pin, *m''*, passes through the other end of the bar into a socket in the center rail *i*. The recessed end is made of iron plates *m'*, which are fastened to and project beyond the end of the bar *m*. These pass through the openings *k* in the side of the car, one on each side of a post, *o*.

When the wagons are in place on the ferry-car the bars *m* are placed behind them, and strong leather straps secured to the bars are fastened to the hind axle-trees, preventing the horses from moving backward or forward. Chains *n*, Fig. 4, are also attached to the side posts *o*, at convenient distances to be fastened to the wagon-wheels for the same purpose.

To accommodate the wide cars, the broad-gage track *p p* is laid outside of the ordinary track *q q*, branching off at convenient points to the landings *l*.

The couplings used between the cars and the engine are constructed of hook draw-bars, somewhat like the Miller draw-bar, but differing from that bar by being precisely at right angles with the axis of the car.

The draw-bar *s*, attached to the ferry-car, is stationary, and the draw-bar *r*, attached to the locomotive, or to the car which is coupled to the ferry-car, hangs on a pivot, and swings only far enough to allow the two hooks to pass each other.

The draw-bar *r* swings into place and couples, and a pin, *t*, is then placed on the outside of the bar *r*, holding it in position.

The draw-bar *s* is constructed with a heel, *s'*, against which the draw-bar *r* strikes before coupling, so as to prevent the locomotive and cars jamming together.

When the locomotive or other car is coupled to the ferry-car in this manner, the arrangement answers all the requirements of the Miller coupling, and operates as a self-uncoupler when the ferry-car arrives at the frogs or crossings at the turning-off point to the ferry-car landing or chute, for egress from or ingress to the same.

The tracks *q q* are laid almost to the landing, for the locomotive to back down onto to draw out the ferry-car.

If the landings at the ends of the route are on opposite sides of the main track, and on the left-hand side of the main track when approached from the bridge, then the position of the draw-bars *r s* will be right for uncoupling automatically; and when the landings are on the right-hand side of the main track when approached from the bridge, the position of the hooks of the draw-bars *r s* will be reversed; but if both landings are on the same side of the main track, so that at one end the ferry-car turns off to the right and at the other end to the left, then the draw-bar *s* at one end of the ferry-car will be placed in the position shown in Fig. 5, so as to uncouple to the left, and at the other end it will be placed in the reverse position, so as to uncouple to the right.

The engine should have pilots and draw-bars *r* at both ends.

The track from the turning-off point to the landing *l* is constructed on a gradual incline, so that the cars will receive momentum enough by their own weight to carry them from the uncoupling-point to the chute.

The principal object of the uncoupler is to give the engineer an opportunity to reduce the rate of speed to three miles per hour at the uncoupling-point, and thereby avoid all the objections to a flying switch, leaving the brakeman to govern the rate of speed of the ferry-car from the point of uncoupling until it arrives at the bumping-post or the landing *l*, for which purpose the two brakes *d d'* are placed near together, for convenience in operating them, and for security in case one should fail.

The chute is of the same width as the ferry-car, with suitable guards at the sides, and the apron *f* of the ferry-car, when lowered thereon, constitutes a portion of the floor of the chute or landing *l*, the whole forming an inclined plane from the end of the ferry-car to the street.

When cars adapted to run on a track of the ordinary gage are used, the center rail *i* is dispensed with, and the cross-bars *m*, for retaining wagons in place, extend from side to side, and each end is made with the side plates *m'*, to grasp the posts *o*, one of the plates, however, being made with a slot, so it can be drawn back in order to place the bar in position, and then pushed out by the side of the car-post *o*, and held in place by an iron pin.

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

1. A railroad ferry-car having an unobstructed floor or platform in the direction of its length, so that teams and wagons can be driven upon the same at one end and off at the other, in combination with landings placed across the ends of the track, at convenient points, near the ends of a railroad-bridge, and drop-platforms of the full width, or nearly full width, of the car, for forming roadways between the landings and the ends of the ferry-car, substantially as described, and for the purpose set forth.

2. A railroad ferry-car composed of two or more cars having clear, unobstructed floors or

platforms from end to end, coupled together and combined with bridges *a*, of the full width, or nearly the full width, of the cars, spanning the spaces between them, the whole forming a continuous floor or platform, so that teams and wagons can be driven upon the same at one end and off at the other, substantially as described, and for the purpose set forth.

3. A ferry-car composed of two or more covered cars, constructed with bridges *a*, flexible coverings *b*, drop-platforms *f*, and with the brakes connected and arranged, substantially as described, so as to be operated from the ends of the ferry-car, the whole being constructed substantially as and for the purposes set forth.

4. The method of operating the ferry-train herein described, which consists of running the ferry-car on a broad-gage track, and the locomotive on a narrow-gage, with an automatic coupling connecting them, so that when the train reaches the point where the broad-gage track diverges to the landing, the locomotive continues on the narrow-gage track, while the ferry-car, following the broad-gage track, turns off, without the aid of a switch, to the landing.

5. The automatic coupling formed of the two hook draw-bars *r* and *s*, having their bearing-faces at right angles to the axis of the train, the bar *s* being stationary and made with the heel *s'*, which acts as a buffer for the end of the bar *r*, while the bar *r* swings on a pivot and is held in place by a pin, the whole constructed and operating as and for the purposes set forth.

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

PETER P. SHELBY.

Witnesses:
E. D. FRANK,
A. L. FRANK.