

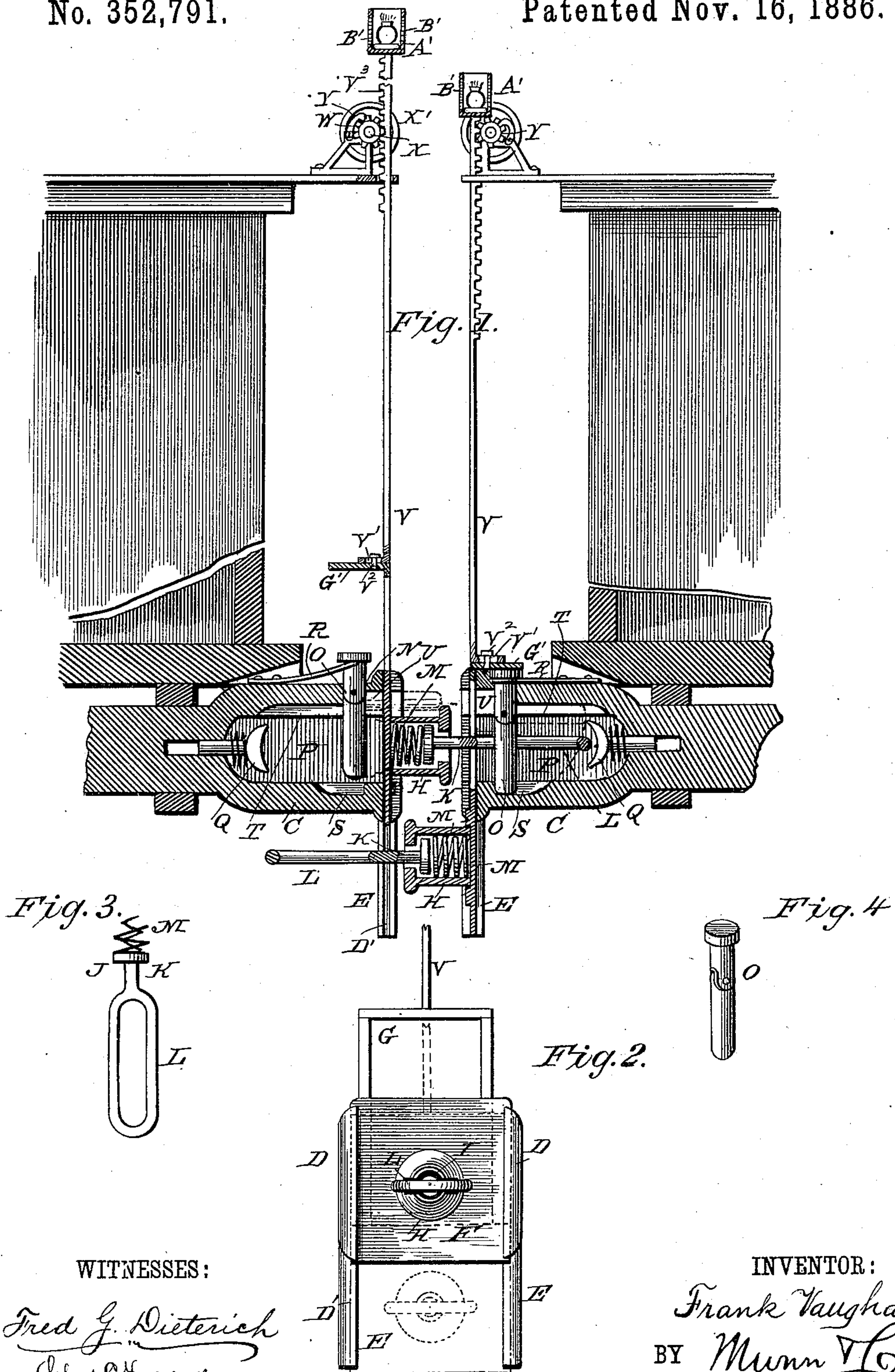
(No Model.)

F. VAUGHAN.

CAR COUPLING.

No. 352,791.

Patented Nov. 16, 1886.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

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## CAR-COUPLING.

SPECIFICATION forming part of Letters Patent No. 352,791, dated November 16, 1886.

Application filed August 30, 1886. Serial No. 212,238. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK VAUGHAN, of Elizabeth City, in the county of Pasquotank and State of North Carolina, have invented a new and useful Improvement in Car-Couplings, of which the following is a specification.

My invention consists in an improved car-coupling which is simple and comparatively inexpensive in construction and exceedingly efficient in its operation, and which will be hereinafter fully described and claimed.

Referring to the accompanying drawings, Figure 1 is a longitudinal vertical sectional view showing my invention in its operative position. Fig. 2 is a front elevation of one of the draw-heads; and Figs. 3 and 4 are detail views, respectively, of the link and coupling-pin.

The same letters of reference indicate corresponding parts in all the figures.

Referring to the several parts by letter, A B represent the adjacent ends of two railroad-cars which are provided with my improved car-coupling.

C C represent the draw-heads, which are immovably secured in the usual position, or beneath the ends of the cars. The open end of each draw-head is formed with the side grooves, D, and the guideways E, extending below the draw-heads proper, and formed with continuations D' of the said vertical grooves D.

F F indicate square plates, which slide in the side grooves, D, at the mouth of each draw-head, each plate having an open frame, G, at its top, as shown; and to the central part of the top cross-bar of each of the said frames is secured the lower end of the rod by means of which the plate or slide is raised and lowered, and which will be hereinafter described.

On the central portion of the outer side of each plate or slide is secured a casing or box, H, having a central opening, I, in its outer end, and through this opening passes the stem K of the link L, each link being formed at its inner end with a stem, K, the free end of which is formed with an enlargement or head, J. This head J fits within the box H, as shown, and between this head and the inner end of the box which is formed by the central part of the sliding plate is placed a spiral spring, M, one end of which is secured to the plate and the other end to the head J, so as to break

the sudden jar and strain, not only when the cars come together, but also when they begin to move and pull apart, the spring M being formed double of an inner and outer spiral spring, the coils of the two spiral springs running in different directions.

The upper side of the draw-head has the vertical aperture N, through which passes the coupling-pin O, this coupling-pin being made in two parts hinged together, as shown, the upper part of the pin being formed with a suitable head, while the lower part is about twice the length of the upper part.

The draw-head is formed with the usual main cavity, P, at the rear or inner end of which is placed a spring-buffer, Q, against which the end of the pin strikes as the cars are coupled, and which breaks the force of the blow. The pin is normally held up by means of a spring, R, so that the pivotal point of its two sections is above the inner side of the top of the draw-head, as shown in the left-hand draw-head in Fig. 1 of the drawings. The bottom of the draw-head is formed with the recess S, inclined at its rear end and perfectly vertical at its forward end, while the inner side of the top of the draw-head has the longitudinal recess T, deep and long enough to receive the lower portion of the coupling-pin when the latter is swung back, and the deeper recess U, running from the aperture N to the front of the draw-head.

The slides F are raised and lowered by the rods V, the lower end of each rod being bent inwardly at right angles and formed with a longitudinal slot, V', through which passes the screw V<sup>2</sup>, which secures the lower end of the rod to the rearwardly-extending arm G' of the open frame-piece G, while the upper part of the rod passes through an opening in the end of the car-roof, and is formed with a series of teeth, V<sup>3</sup>, with which mesh the teeth of a pinion, W, on a transverse shaft, X, on the top of the car, the said shaft having a hand-wheel, X', for conveniently turning it. The rod V can be held securely at the point where it has been raised or lowered by a pivoted pawl, Y, which may be thrown forward to engage with its teeth. On the top of each rod V is secured a casing, A', which is open at its top, and has an aperture, B', formed in each of its sides, in which a small pane of glass



may be placed, the outside of this casing being painted red, and a lamp having a red-glass chimney being placed in the casing.

In operation, when two cars provided with my improved coupling are coupled together, one of the slides is raised by its rod to its highest point, or stop X, when its link will be exactly in front of or on a line with the middle height of its draw-head, while the slide and link on the end of the approaching car is lowered to its lowest point below the mouth of its draw head, leaving the mouth of its draw-head open and clear for the reception of the opposite link, as shown in the right-hand draw-head in Fig. 1 of the drawings. It will be seen that the slide can be raised no higher than the stop X, nor can it descend lower than the stop X X. When the slide is lowered, the inwardly-extending arm of its open-top frame-piece comes in contact with the head of that coupling-pin which is normally raised by its spring R, thus forcing the pin down until its head comes in contact with the top of the draw-head, which brings its lower rounded end down within the recess S in the bottom of the draw-head, but without bearing down against the bottom of the said recess. It will be seen that as soon as one rod is lowered the lowering of its signal-casing and lamp will signal that fact and signal to the brakeman on the other car that he is to keep his rod and sliding plate elevated up in front of the draw-head, thus preventing both plates being raised or lowered at the same time, which might occur, especially at night. At the moment when the cars come together the free end of the link of the raised plate and rod enters the mouth of the other draw-head, and, striking against the main or lower part of the coupling-pin, swings the said part back in a segment of a circle, as indicated in dotted lines in Fig. 1, until the end of the link clears the lower end of the pin, when the latter falls by gravity inside of the link into its vertical position, thus locking the link in the draw-head and coupling the cars together, the lower end of the pin, when it falls into its vertical position, bearing against the front vertical wall of the recess in the bottom of the draw-head. It will thus be seen that the cars automatically couple themselves together. To uncouple the cars the rod of the right-hand car in the drawings is raised a short distance, sufficient to permit of that pin being raised by its spring until its lower rounded end is raised clear of the front wall of the recess in the bottom of the draw-head, when, on the cars moving apart, the link will draw the lower main portion of the pin forward, swinging it on its pivotal point in a segment of a circle, as shown in dotted lines in Fig. 1, the front recess, U, being of sufficient depth to receive the lower part of the pin completely within it as it is drawn forward by the link, so as to present no obstruction to the withdrawal of the link from the draw-head, and the rear top recess, T, is of such length and depth as to completely receive the lower part of the pin as the same is raised

back and up as the link enters, so as to present no obstruction to the admission of the link.

It will be seen that as soon as the rods V are raised sufficiently to remove the downward pressure of the arms G' the springs R immediately and automatically raise the pins, so that the links can draw their lower pivoted or hinged portions outward to uncouple the cars, while the lowering of the rod to lower the plate to open the mouth of the draw-head depresses the pin, so that it can be swung back by the entering link, and so that its lower rounded end will bear against the front vertical wall of the recess in the bottom of the draw-head.

Owing to the peculiar formation and arrangement of the spring which is attached to the stem of the link and the form of the link itself, the link may oscillate to a limited extent both up and down and from side to side.

Suppose there be two cars provided with my improved coupling, and that the link of one of them, standing at the middle height of its draw-head, is thirty-four inches above the level of the top of the rails. Coupling will readily take place, although the middle height of the opposite draw-head be as high as thirty-five and one-half inches above the rails, or as low as thirty-two and one-half inches above the rails, provided the vertical diameter of the cavity of the draw-head at its mouth be five inches and the link be not more than one inch thick.

In operation, when two cars provided with my improved coupling are meeting to be coupled together, the link of one stands at its highest point, and the link of the other at its lowest point, and this will be an invariable rule for brakemen to observe; but in case one of the two cars is provided with my coupling and the opposite car with some other, coupling would be readily effected by raising or lowering the link of my coupling to the proper position to enter the draw-head of the opposite car, whether the middle height of that draw-head be unusually high or low, and whether one car be loaded and the other not, or both be either loaded or unloaded. At uncoupling, one slide is slightly raised, sufficiently to permit the pin to be drawn forward by the opposite link, and the pin may be held in this position for uncoupling when desired.

In the darkness of night, as well as in the day, the brakeman at the top of the car knows by the position of the lamp on the end of the opposite car whether its link is up or down. If it be down and his own down also, he will raise his, or if both be up he will lower his. In either case the cars will couple.

The lanterns or lamps are held securely within the casings, and may be removed at pleasure to be filled and trimmed. The object of the longitudinal slot in the lower end of each rod V is to prevent the shocks continually taking place when the cars are in motion, and when they are being coupled together from throwing the gearing at the top of the



rods out of place, the screw  $V^2$  moving backward and forward in the said slot in the lower end of the rod. It will be seen that the links may be raised or lowered to suit slight inequalities in the height of the draw-heads.

From the foregoing description, taken in connection with the accompanying drawings, the construction, operation, and advantages of my improved car-coupling will readily be understood. It will be seen that it is simple in construction and comparatively inexpensive to manufacture, and that it is exceedingly effective in its operation. Any other suitable means for raising the rods  $V$  may be employed in place of that herein set forth.

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

1. The combination, with the draw-head having the vertical guideways at its mouth, having the aperture in its top, and the interior lower and upper recesses, arranged as described, of the spring-actuated coupling-pin, composed of the two parts pivoted together, the slide having the open frame formed with the inwardly-extending arm secured to its upper end and carrying the box or casing on its outer sides, suitable means for raising and lowering the said slide, the link having the headed stem at one of its ends, and the double spiral spring, arranged as described, as and for the purpose herein set forth.

2. The combination, with the draw-head having the vertical guideways at its mouth, having the aperture in its top, and the interior lower and upper recesses, arranged as described, of the spring-actuated coupling-pin,

composed of the two parts pivoted together, the slide having the open frame formed with the inwardly-extending arm secured to its upper end and carrying the box or casing on its outer side, the rod having the inwardly-bent slotted lower end, the casing secured to the top of the rod, having the open top, the side apertures, and the lamp secured within it, means, substantially as described, for raising and lowering the said rod and holding it in its adjusted position, the link having the headed stem at one of its ends, and the double spiral spring, arranged as described.

3. The combination, with the draw-head having the vertical guideways, the aperture in its top, and the interior lower and upper recesses, arranged as described, of the spring-buffers, the spring-actuated coupling-pin, composed of the two parts pivoted together, the slide having the open frame formed with the inwardly-extending arm secured to its upper end and carrying the box or casing on its outer side, the rod having the inwardly-bent slotted lower end, the casing secured to the top of the rod, having the open top, the side apertures, and the lamp secured within it, means, substantially as described, for raising and lowering the said rod and holding it in its adjusted position, the link having the headed stem at one of its ends, and the double spiral spring, arranged as described, all constructed and arranged to operate in the manner and for the purpose herein set forth.

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Witnesses:

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