

P. H. SHAILER.
AUTOMATIC COUPLING.
APPLICATION FILED AUG. 3, 1907.

984,609.

Patented Feb. 21, 1911.

2 SHEETS-SHEET 1.

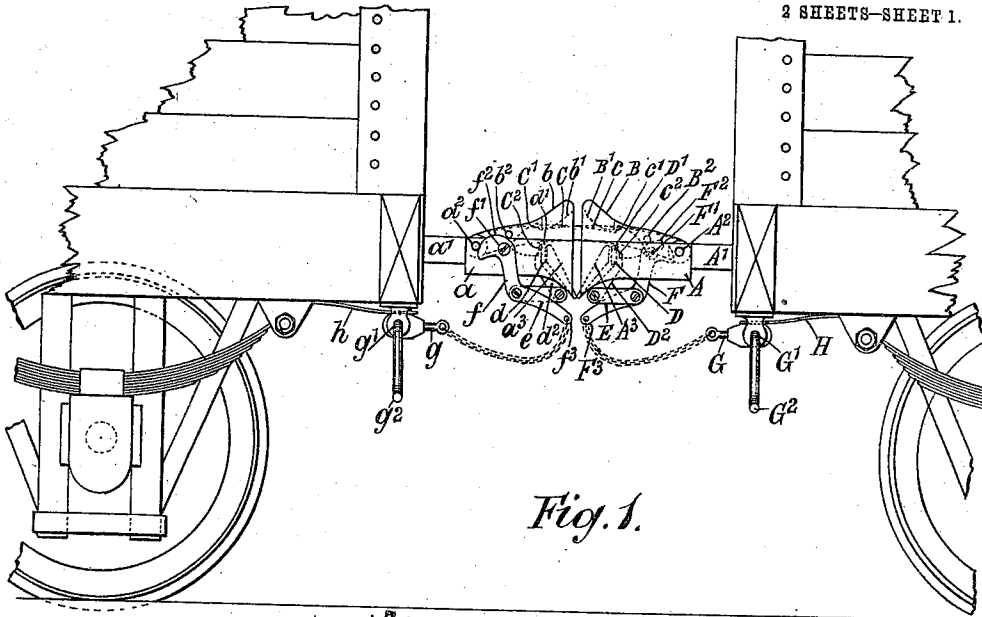


Fig. 1.

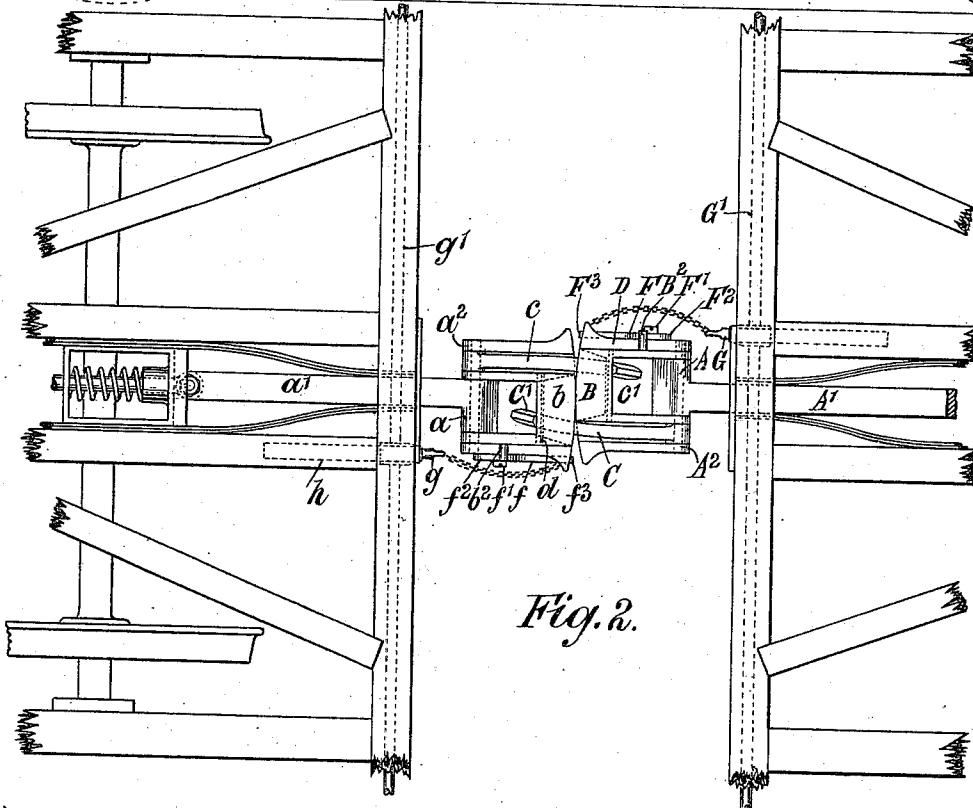


Fig. 2.

WITNESSES
W. P. Burd
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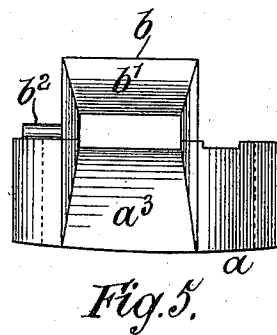
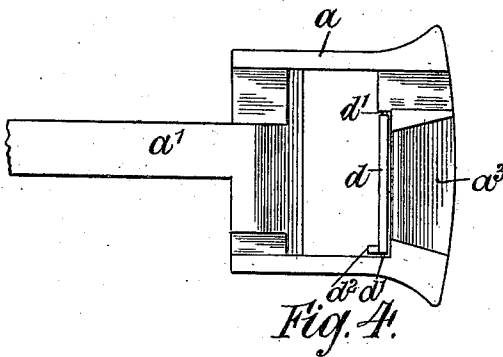
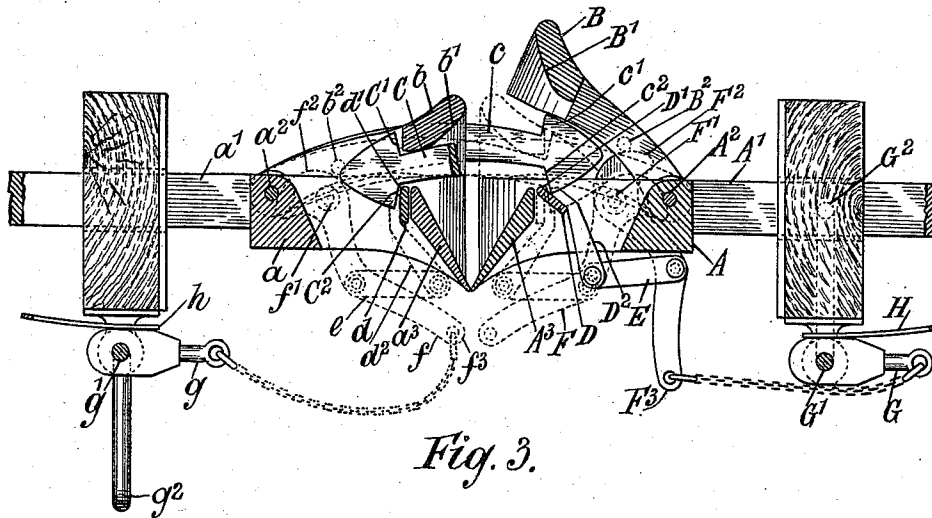
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WITNESSES

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UNITED STATES PATENT OFFICE.

PERCY HENRY SHAILER, OF AUCKLAND, NEW ZEALAND.

AUTOMATIC COUPLING.

984,609.

Specification of Letters Patent.

Patented Feb. 21, 1911.

Application filed August 3, 1907. Serial No. 387,187.

To all whom it may concern:

Be it known that I, PERCY HENRY SHAILER, a subject of the King of Great Britain, residing at the Carlton, City Road, Auckland, New Zealand, have invented certain new and useful Improvements in Automatic Couplings, of which the following is a specification.

This invention relates to an improved automatic coupling for trucks and other rolling stock of railways.

Of the coupling the essential components for each vehicle, at each end thereof, are three in number as follows:

(1) A ledge-carrying member, which may be spring-mounted by being formed integrally with, or secured to, the draw-bar, which draw-bar is adapted to yield elastically to a pull or also to a push so as to do further duty as a buffer for which purpose it is provided with a horizontally convex face. This member may moreover be so spring-mounted as to yield elastically to a side horizontal pressure, being arranged to always tend to assume a horizontal central situation.

(2) A loop-element pivoted to and supported by the ledge-carrying member, and:

(3) A hook-element, this latter being formed with an arrow-shaped head having one fang presented upward and the other fang downward, the hook being pivotally mounted on the ledge-carrying member with its middle line a little on one side of the middle line of the vehicle.

The faces of the components (1) and (2) above described are provided with beveled surfaces which converge toward the vehicle, being thus adapted to guide the arrow-shaped head of the pivoted hook-element of the approaching vehicle into the intervening space between the components (1) and (2) which normally exists to some extent and which becomes temporarily increased by the interposition of the wedge-shaped extremity of the hook-element, the loop-element being first lifted and then subsequently dropped, when the fangs of the arrow-headed hook pass the edges of the ledge and the loop. In this manner each of two symmetrically situated hooks will enter into engagement, by each of their fangs, with the ledge or the loop organs of attachment of the coupled vehicle.

The double-fang construction of the ar-

row-shaped hook serves to preclude the unintentional separation of the components of the coupling by jolting, for any such movement, which may tend to disengage the lower fang, will be such as simultaneously to insure the maintenance of the engagement of the upper fang.

The duplication of the parts is requisite to permit of either end of one vehicle to be coupled to either end of another, the condition to be satisfied being that when facing the end of a vehicle, the hook-element must always be on the same one side of the center line, that is to say, always on the right-hand side or, alternatively, always on the left-hand side.

The four-fold construction above described will require the employment of special means to facilitate the disconnection of the coupling, the nature of those means being such that the loop-element is first lifted out of a position of engagement with the upward directed fang of the hook-element, prior to raising the under fang of the hook-element clear of the ledge.

Referring to the accompanying drawings:—Figure 1 is a side elevation of two railway wagons coupled together. Fig. 2 is a plan with the upper portion of the trucks removed, showing the ends of the under-frames. Fig. 3 is a side elevation of the coupling, drawn to an enlarged scale, the elements of the coupling of one wagon being placed in the disengaged position. Fig. 4 is a plan of the ledge-carrying member, and: Fig. 5 is a face view of the ledge-carrying member and also of the loop element.

In these figures a A are the ledge-carrying members of the pair of couplings, these being shown formed integrally with the draw-bars a^1 A¹, b B are the loop-elements these being pivotally mounted on a A respectively at a^2 A² and c C are the hook-elements, these also being pivotally mounted on a A respectively at a^2 A². The extremities of the hook-elements are arrow-shaped the upward standing fangs being denoted by c^1 C¹ and the downward lying flange by c^2 C² respectively. The faces of the a and A members are formed with upward sloping beveled surfaces a^3 A³ and the faces of the loop-elements b b have corresponding downward sloping beveled surfaces b^1 B¹. The hook-element is supported by the ledge-

member so that normally its pointed extremity is approximately on the same level as the edge of the ledge.

On the approach of two vehicles fitted with couplings as above described, the extremity of C will engage with the beveled surfaces a^3 of a causing C to be raised and consequently to engage with the surface b^1 of b thereby causing b to be lifted.

The completion of the engagement of C will be effected by the dropping of the fang C^2 behind the ledge of a and the dropping of the loop b over the fang C^1 , the hook element c entering approximately simultaneously into corresponding engagement with A and B.

The upward sloping surfaces of a A and the downward sloping surfaces of b B cooperate with the wedge formation of the arrow-shaped extremities of c C to guide the coupling elements into engagement when, by differences in loading or from other causes, the coupling elements of the two vehicles to be joined are not at the same level. Also to provide for the contingency of the vehicles making their approach to one another on a curved railway, the faces of a A, b B, have also side-beveled surfaces.

In effecting the disconnection of the coupling it will be requisite for B to be raised out of the range of engagement with the fang c^1 of c before c^2 of c can be raised clear of the ledge of A, see Fig. 3, and similarly with respect to the corresponding twin-elements b , C^1 , C^2 C and a . This can be managed by simultaneously operating the disconnecting mechanism of both vehicles, there being in such a case advantageously an interval between the commencement of the lifting of B and the raising of C but to avoid the necessity of operating both disconnecting mechanisms at the same time, I so construct the ledge-element as to enable it to be angularly displaced in such a manner as to permit the under fang of the hook-element to slide upward out of engagement therewith on the separation of the vehicles, after the loop-elements have been lifted clear of the upper fangs of the hook-elements.

For the above described purpose, plates d D are at d^1 D^1 pivoted to a A and to these plates are secured at one end downward depending lever-arms d^2 D^2 which, by means of links e E, are pin-jointed to the arms f F of cam-levers which are pivotally mounted on a A at f^1 , F^1 . Cam-surfaces f^2 F^2 are formed on the upper ends of these levers, which cams engage beneath pins b^2 B^2 projecting from the sides of the loop-elements b B. The extremities f^3 F^3 of the cam-levers are connected by chains to levers g G which are secured to cross-spindles g^1 G^1 mounted in bearings provided beneath the ends of the vehicles. The spindles have cranked-arms g^2 G^2 at their extremities

whereby the spindles can with facility be angularly displaced from either side of the vehicle. The spindles and levers are retained in the positions in which they are set by means of springs h H which engage with flat surfaces formed on the levers g G.

The operation of disconnection is shown half-performed in Fig. 3 in which the crank-arm G^2 has been turned into the upward-standing position and the lever G so turned as to point away from the coupling. By the chain-connection the cam-lever has effected the raising of the loop-element B clear of the fang c^1 and also placed the ledge-plate D into an inclined position, somewhat raising the hook-element c so that it is in a position to slide off the plate when the vehicles separate. By similarly turning the crank g^2 into an upward position the fangs of the hook C will also be disengaged from the ledge d and loop b and the vehicles can then be separated. By means of this contrivance it will be possible for the driver of a shunting-engine to perform the operation of shunting and assembling vehicles without leaving his platform, if he is provided with means for operating the cam-lever of the coupling on the engine. For this purpose the cam levers of all the other vehicles will be placed in the disengaged position, which will prevent the hook-element of the engine from entering into engagement but will permit the hook-elements of either of the vehicles to automatically connect itself to the engine and, after the vehicle has been shifted into the desired situation, the disconnection with the engine can be performed by a pull on the cam-lever of the engine only.

I claim:

1. An automatic coupling for railway vehicles comprising, for each vehicle, at each end thereof, a ledge-carrying member, a loop-element pivotally mounted on and supported by the ledge-carrying member and an arrow-headed hook-element also pivotally mounted on and supported by the ledge-carrying member, the three above mentioned elements being so arranged that, on the completion of the approach of two similarly fitted vehicles, the two hook-elements will first be raised and subsequently drop into positions such that their downward projecting fangs will engage with the inside edges of the ledges and the loop-elements will first be raised and subsequently drop to engage with the inward projecting fangs of the hook-elements.

2. An automatic coupling for railway carriages comprising, for each vehicle, at each end thereof, a ledge-carrying member, a loop-element pivotally mounted on and supported by the ledge-carrying member, an arrow-headed hook-element also pivotally mounted on and supported by the ledge-carrying member a lever pivotally mounted

on the ledge-carrying member and adapted to lift the loop element and a plate pivoted to the ledge-carrying member and operated by said lever and adapted to lift the arrow
5 headed hook element out of engagement with the ledge-carrying member.

3. An automatic coupling for railway carriages comprising, for each vehicle, at each
10 end thereof, a ledge-carrying member, a loop-element pivotally mounted on and supported by the ledge-carrying member, an arrow-headed hook-element also pivotally mounted on and supported by the ledge-carrying member a lever adapted to lift the

loop-element and a plate, constituting the
engaging portion of the ledge-carrying
member with the coupled vehicle, and adapted to be so tilted that the engaging lower
fang of the hook-element of the coupled vehicle can slide thereoff. 15

In testimony whereof I have hereunto set
my hand in presence of two subscribing witnesses. 20

PERCY HENRY SHAILER.

Witnesses:

CHARLES EDWARD GRAHAM,
HENRY WATCHORNE CLARKE.