

No. 667,636.

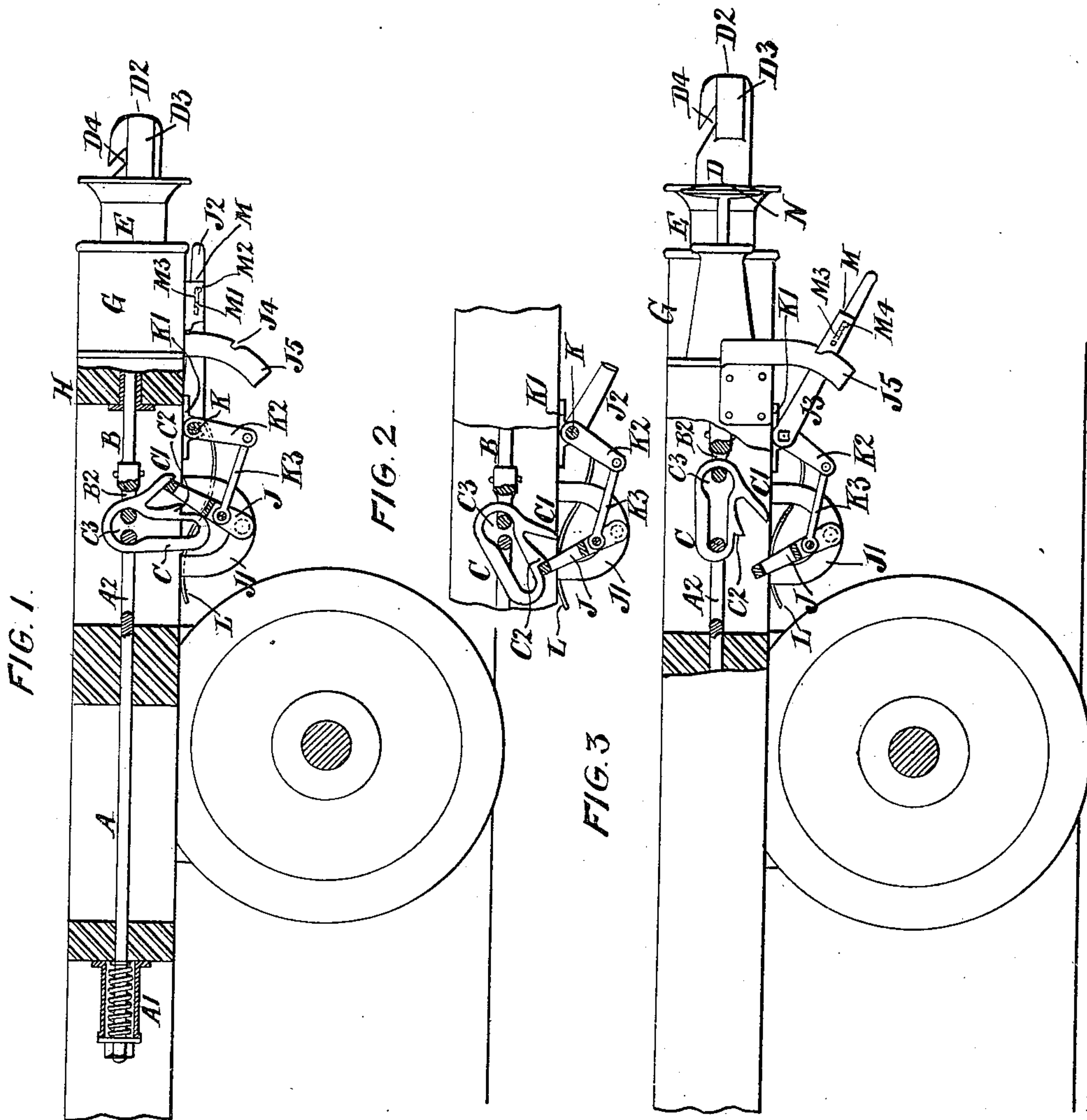
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W. R. STRATHERN & C. J. SELLAR.  
AUTOMATIC RAILWAY COUPLING.

(No Model.)

(Application filed July 7, 1900.)

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WITNESSES

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# UNITED STATES PATENT OFFICE.

WILLIAM ROBERTSON STRATHERN AND CHARLES JAMES SELLAR, OF  
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## AUTOMATIC RAILWAY-COUPLING.

SPECIFICATION forming part of Letters Patent No. 667,636, dated February 5, 1901.

Application filed July 7, 1900. Serial No. 22,790. (No model.)

*To all whom it may concern:*

Be it known that we, WILLIAM ROBERTSON STRATHERN and CHARLES JAMES SELLAR, subjects of the Queen of Great Britain and Ireland, and residents of Glasgow, in the county of Lanark, Scotland, (whose postal addresses are respectively 621 Alexandra Parade, Glasgow, and 92 Albert Drive, Crosshill, Glasgow, Scotland,) have invented certain Improvements in Automatic Couplings for Railway Carriages, Cars, or Similar Vehicles, (for which we have applied for a British Patent No. 4,222, dated March 6, 1900,) of which the following is a specification.

Our said invention relates to automatic couplings for coupling up two or more carriages, cars, or similar vehicles, and has for its object to lessen the cost and render them safe and more efficient than those in use at present.

In the accompanying explanatory drawings, Figures 1, 2, and 3 are side elevations, partly in section, and Fig. 4 is a plan, also partly in section, of the improvements. Fig. 5 is a longitudinal section, and Fig. 6 is an end elevation, of details in connection therewith, Figs. 7 and 8 being side elevations of other details.

In the drawings the same reference-letters are used to mark the same or like parts wherever they are repeated.

In carrying out the invention there are mounted on the framing at each end of the wagon or vehicle back and front draw-bars A B the back bar being fixed and fitted at its inner end with an ordinary draw-spring device A'. The bars A B are connected by a long chain-link C, which engages in eyes A<sup>2</sup> B<sup>2</sup>, formed in the ends of the bars, the link-opening being preferably widened at one end. The outer end of the movable front bar B is connected or hooked to a tongue-piece or coupling-bar D, the hook D' on the tongue-piece engaging in a comparatively long eye B<sup>3</sup>, formed on the end of the bar. An open hook connection D' is shown, but, if preferred, the hook may be closed, as indicated by dotted lines in Fig. 7. The tongue-piece D is arranged to work in a buffer-gland E, fitted to slide in a box or casing G, into which the end of the front bar B extends, the box being bolted to the head-stock H of the wagon. The

gland E when in its normal or working position is arranged to protrude from the box G to some extent, and it is held out in this position by a buffer-spring G', fitted within the box, the spring acting so as to press the flanged end E' of the gland against stops E<sup>3</sup>, Fig. 5, fixed at the outer end of the box to limit the extent of the gland's outward travel. The flange E' of each gland E fits quite loosely within its gland-box G, so as thereby to allow the outer end of the gland to turn when necessary in either a horizontal, an upward, or a downward direction. This method of arranging the gland in its box, combined with the action of the gland-spring G', thus imparts to the gland a great degree of flexibility, which is highly advantageous when coupling up the parts and when the wagons are running together. The tongue-piece D is formed with a head or enlargement D<sup>2</sup> on its outer end, the head being spherically or elliptically shaped in plan and presenting projecting cam-shaped sides D<sup>3</sup>. The long chain-link or intermediate connection C is formed with projections or stops C' C<sup>2</sup> and is acted on by a tappet-lever J, pivoted in brackets J', fixed to the framing of the wagon. The tappet-lever J is actuated by hand-levers J<sup>2</sup> J<sup>3</sup>, arranged, respectively, on opposite sides of the wagon and fixed to a cross-shaft K, mounted in brackets K' on the framing, the shaft being connected to the tappet-lever by a lever K<sup>2</sup> on the shaft and a connecting-link K<sup>3</sup>. Blade-springs L are fitted on each end of the cross-shaft K, and their action always tends to turn the shaft when the hand-levers J<sup>2</sup> J<sup>3</sup> are not locked or held, so as to keep the tappet-lever J in its normal or working position, as shown in Fig. 1. As the wagons approach each other to be coupled up, assuming each link C, connecting the draw-bars A B, to be in a vertical position, as shown in Fig. 1, the tongue-heads D<sup>2</sup> slide forward past each other, each being pressed into the other approaching gland, so that when the two buffer-glands E are brought close together, as shown in Fig. 4, the projecting parts D<sup>3</sup> of the tongues D overlap each other and cause the heads to become firmly interlocked, and as the flat sides of the tongue-pieces D are held against projecting side webs E<sup>4</sup>, formed on the glands, the tongue-pieces



are thereby rigidly bound, so that no jarring action can take place when a pull is put on the wagons. When the wagons and their parts are thus coupled up, the eyes  $A^2 B^2$  of the draw-bars  $A B$  engage with the widened part  $C^3$  of the movable connecting-link  $C$  and the projection  $C'$  butts up against the end of the tappet-lever  $J$ , so that a perfectly rigid connection is thereby formed between the draw-bars and there is not the slightest tendency for the link  $C$  to assume a horizontal position when a pull is put on the wagons. Before the wagons are coupled up, however, the links  $C$ , connecting the draw-bars, may be in a horizontal position, as shown in Fig. 3; but they are very simply turned down into the required vertical position during a coupling action by means which will be hereinafter described. When it is desired to uncouple the wagons, the outside hand-levers  $J^2 J^3$  are turned down into the position shown in Fig. 2. This movement causes the tappet-lever  $J$  to tilt the long chain connecting-link  $C$  into an annular position, as shown in Fig. 2, the top end of the tappet-lever sliding over the link and acting against the projection  $C^2$ , so as to hold the link in this tilted position. The wagons are now in position to be uncoupled, as when a pull is put on them it only serves to draw the long link  $C$  into a horizontal position, as shown in Fig. 3. The tongue-pieces  $D$  at the same time are drawn out of their respective glands, so that the tongue-heads slide apart from each other and become disconnected. If it is desired to prevent coupling, the tappet-lever  $J$  is retained in the position shown in Figs. 2 and 3 by a locking device, which is fitted in connection with each hand-lever  $J^2 J^3$ . The locking device consists of a saddle-piece or latch  $M$ , fitted to slide freely on the lever and having its inner end formed to engage in cam-shaped notches  $J^4$ , formed in a quadrant-piece  $J^5$ , fixed to the framing and over which the lever travels. The latch is provided with two cross-pins  $M' M^2$ , which are fitted to slide in a slot  $M^3$ , formed in the lever, the slot being formed with a bent part or notch  $M^4$  at its outer end. The latch  $M$  is held in an unlocked position, as shown in Fig. 1, by the cross-pin  $M^2$ , which is placed so as to engage in the notch  $M^4$ , and thereby secure the latch in the required position. The lever is locked, as shown in Fig. 3, by raising the latch  $M$  a little, so as to release the pin  $M^2$  from the notch  $M^4$  and sliding it thereafter along the lever, so that its inner end engages in the cam-shaped notches  $J^4$  in the sides of the quadrant-piece  $J^5$ . The lever can be unlocked automatically by simply moving it a little farther downward, this movement causing the cam-shaped portions of the notches  $J^4$  to act on the latch, so as to slide it out of contact with the notches, and thereby release the lever. By this means the attendant or shunter can change the position of the tappet-lever  $J$  from either side of the wagon, there being no necessity for his passing from one

side of the wagon to the other to withdraw a latch to release a lever which may be locked. If the tappet-lever  $J$  of each wagon is not locked or held when the movable link  $C$  on each is in a horizontal position, it will return outward by the action of the blade-springs  $L$ , so as to bear against the catch  $C'$  on the movable link  $C$ , occupying thereby almost its full normal or working position, and being then placed so as to cause the link  $C$  to return to a vertical position, when a coupling action takes place. Each draw-bar  $B$  during such coupling action receives an inward movement, caused by the movement of the approaching gland into which its head  $D^2$  enters, the gland  $E$  acting on the head  $D^2$  to move it by means of transverse projections or stops  $E^5$ , formed on the gland. This inward movement of the two draw-bars  $B$  causes the projections  $C'$  on the links  $C$  to act against the tappet-levers  $J$ , so as to cause the links to tilt around and fall into the required vertical position, each tappet-lever  $J$  then moving a little farther outward, so as to occupy its full normal position with its end bearing against the catch  $C'$ , a rigid connection being thus formed between the draw-bars  $A B$ , as shown in Fig. 1, when the parts are coupled up. Two wagons therefore can always be coupled up, although their coupling parts are respectively in a coupled and uncoupled position, provided that the tappet-lever of the wagon having its parts in an uncoupled position is not locked or held. Each tongue-piece or coupling-bar  $D$  is formed with a hook  $D^4$  on its outer end, so that it may be used with an ordinary chain coupling, if desired. Each wagon is preferably provided with ordinary buffers  $N$ ; but they may be dispensed with, if desired.

What we claim as our invention is—

1. Improvements in automatic couplings for railway carriages, cars, or similar vehicles, comprising in combination, a fixed and a movable draw-bar mounted on the framing at each end of the carriage or vehicle, a tilting link connecting the bars with means for changing and holding the link in different positions, a coupling-bar connected to the movable draw-bar, and fitting in a central buffer-gland arranged to work in a box fixed to the head-stock or end frame of the carriage substantially as and for the purposes hereinbefore described.

2. Improvements in automatic couplings for railway carriages, cars, or similar vehicles, comprising in combination, a fixed and a movable draw-bar mounted on the framing at each end of the carriage, a movable link connecting the bars having projections or catches formed on it, a tappet-lever centered on the framing to act on the catches to change and hold the link in different positions as required, the tappet-lever being worked by hand-levers fixed to a cross-shaft connected to the tappet-piece by a link-and-lever attachment, a coupling-bar connected to the movable draw-bar and arranged within a



gland and box on the head-stock of the carriage substantially as described.

3. In automatic couplings for railway carriages, cars, or similar vehicles, the combination with a longitudinally-movable draw-bar of a coupling-bar having its inner end engaging in an elongated eye formed in the movable draw-bar, and having a head or enlargement formed on its outer end, the head being shaped so as to present projecting cam-shaped side parts, the coupling-bar being arranged in a gland and a spring to act on the gland in a box, on the head-stock of the carriage substantially as described.

15 4. In automatic couplings for railway carriages, cars, or similar vehicles, a coupling-bar formed with a coupling-head and connected to a draw-bar, a buffer-gland within which the coupling-bar is arranged, the gland

having a flanged inner end to be acted on by 20  
a spring fitted within the gland-box in which the gland works, the spring tending always to press the flange against stops fixed at the outer end of the gland-box, a set of projections being formed on each side within the 25  
gland against either set of which projections the coupling-bar bears when a coupling action takes place, transverse stops being arranged within the gland to act on the head of the coupling-bar substantially as described. 30

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

WILLIAM ROBERTSON STRATHERN.

CHARLES JAMES SELLAR.

Witnesses:

CHARLES DE LAVAL BOST,

DAVID FERGUSON.