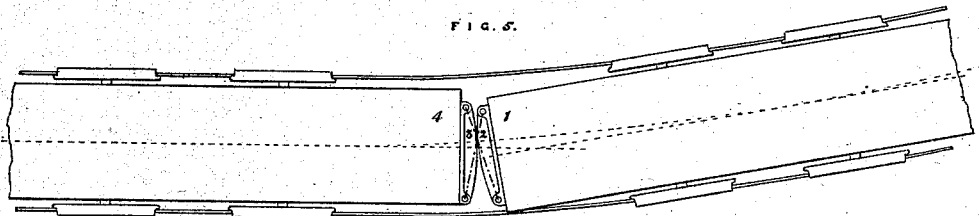
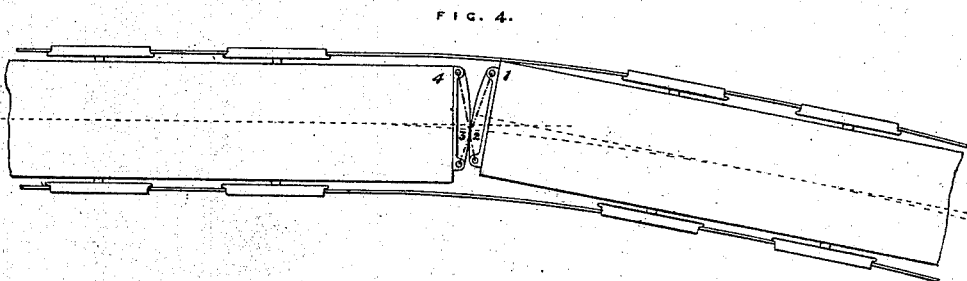
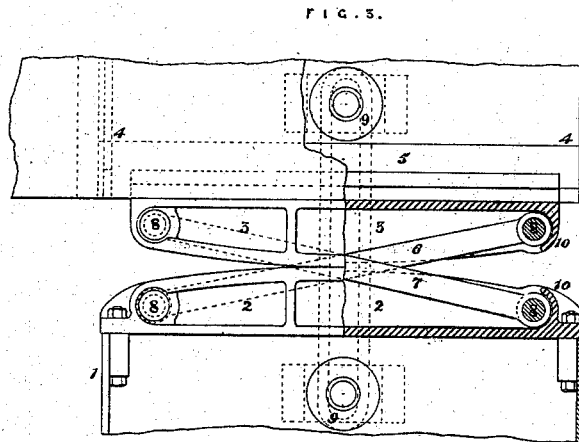
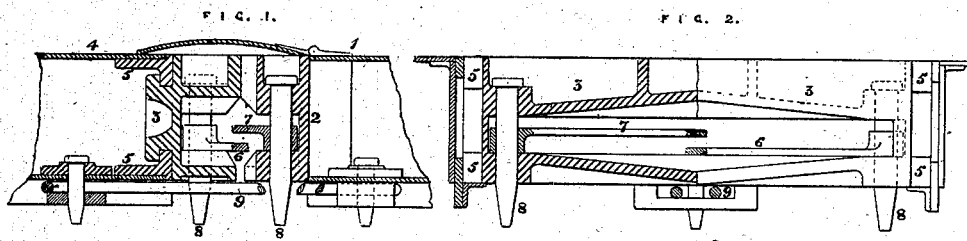


# DUBS & COPESTAKE.

## Car Coupling.

No. 112,431.

Patented March 7, 1871.



Witnesses.  
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*by Niedersheim & Norris*  
*their Atty.*

# United States Patent Office.

HENRY DÜBS AND SAMPSON GEORGE GOODALL-COPESTAKE, OF GLASGOW, GREAT BRITAIN.

Letters Patent No. 112,431, dated March 7, 1871.

## IMPROVEMENT IN COUPLINGS FOR RAILWAY CARS.

The Schedule referred to in these Letters Patent and making part of the same.

We, HENRY DÜBS and SAMPSON GEORGE GOODALL-COPESTAKE, of Glasgow, in the county of Lanark, Kingdom of Great Britain and Ireland, have invented a certain Improvement in Coupling Attachments for Locomotives and Cars, of which the following is a specification.

### *Nature and Objects of the Invention.*

Our invention relates to the combination of diagonal bars with curved frame ends, whereby an improved coupling attachment is obtained for locomotives and cars; and

An important object of our invention is to connect together two ordinary tank-locomotives, with their fire-box ends toward each other, and with the view of thereby obtaining the advantages of what is known as the "Fairlie system" of locomotive, without its special, expensive, and in many respects inconvenient construction, our improved coupling attachment enabling the locomotives to pass easily round curves, and causing the line of tractive strain between them to be in the best possible position under all circumstances, whether the locomotives be passing over curves of greater or lesser radius or over a straight track.

In carrying out our invention the adjacent or abutting ends of the locomotive-frames are curved convexly to centers coinciding with or near the centers of the respective wheel bases, and the ends are connected by crossed or diagonal bars.

The same combining or coupling arrangements are also obviously applicable between a locomotive and tender, or between carriages or wagons, and are especially suitable for permanently-coupled trains of passenger carriages.

### *Description of the Accompanying Drawing.*

Figures 1 and 2 are vertical sections at right angles to each other, and

Figure 3 is a horizontal section.

Figures 4 and 5 are diagrams showing the relative positions assumed by two four-wheeled frames when moving from a straight part to a curved part of the line, or *vice versa*.

### *General Description.*

To the end of the frame 1 of one of the locomotives there is fixed a strong casting or abutment-piece, 2, the outer edge of which is shaped convexly in plan, as best seen in the lower part of fig. 3.

A similar abutment-piece, 3, is carried upon the frame 4 of the other locomotive; but, instead of being fixed to that frame, it is fitted so as to be capable

of a short transverse movement between guides 5 5, fixed to the frame 4, such movement being desirable for reasons hereinafter explained, although in some cases (as, for example, with wagons) it may be dispensed with.

The abutment-pieces 2 3 are connected by diagonal bars 6 7 jointed upon vertical pins 8, entered down through eyes formed for them in the abutment-pieces, in position as near as can be conveniently managed to the curved edges.

One bar, 6, is jointed to a pin at the right-hand side of one locomotive, 1, and crosses over to a pin at the left-hand side of the other locomotive, 4, while the other bar, 7, crosses from a pin at the left-hand side of the former, 1, to one at the right-hand side of the latter, 4.

Two or more bars may be applied in the same vertical planes as the bars 6 7.

With these arrangements the two locomotives adapt themselves with facility to curves, and the strain is under all circumstances in the straight line joining the centers of the convex curves of the abutment-pieces, or approximately so.

The said line of strain also always passes through the intersection of the vertical planes of the bars 6 7, or very nearly so.

The capability of transverse movement given to one, 3, of the abutment-pieces is adopted to avoid a little transverse pressure which would otherwise be exerted against the rails by the wheels, when the coupled locomotives or carriages are passing over the part of a line at which a change takes place from one curve to another curve or to a straight line, or *vice versa*.

Extreme cases of the kind referred to are shown in figs. 4 and 5, in which each locomotive or carriage is assumed to be placed exactly central on its respective part of the line, consistently with which it will be observed that the movable abutment-piece, 3, has to shift a little to one side or the other, in order that the parts of the couplings may preserve their proper relations to each other without moving either locomotive out of its proper position.

A reserve or safety-coupling link, 9, is provided in a central position, being made of sufficient length to allow for the varying positions of the parts.

When disconnecting the diagonal bars 6 7 it is preferable to remove the two pins, 8, in one of the abutment-pieces, 2 or 3, so that the two bars may be carried by one locomotive when disconnected.

The abutment-pieces are formed with lugs 10, extending partly round the ends of the bars, and serving to prevent the bars when disconnected from turn-

ing outward beyond a certain position, such that they will return inward to their proper positions without handling on the locomotives being brought together again.

The abutment-pieces 2 3 are formed with recesses within which the bars 6 7 lie, and these recesses are made deeper at their middle parts, so that the ends of the bars may enter without catching when the locomotives are being brought together.

*Claims.*

We claim as our invention—

1. The diagonal coupling-bars 6 and 7, pivoted within the lugs 10 of the detachable curved frame ends or abutments 2 and 3, arranged and operating together, as herein shown and described.

2. The transversely-movable and detachable metallic frame ends or abutments, applied to the ends of a car or locomotive in the manner herein shown and described.

HENRY DÜBS.

SAMPSON GEORGE GOODALL-COPESTAKE.

Witnesses:

EDMUND HUNT,

WALLACE FAIRWEATHER.