No. 648,780. Patented May 1, 1900.

T. H. PATCHING.

AUTOMATIC COUPLING.

(Application filed July 22, 1899.)

(No Model.)

FIG. 1.

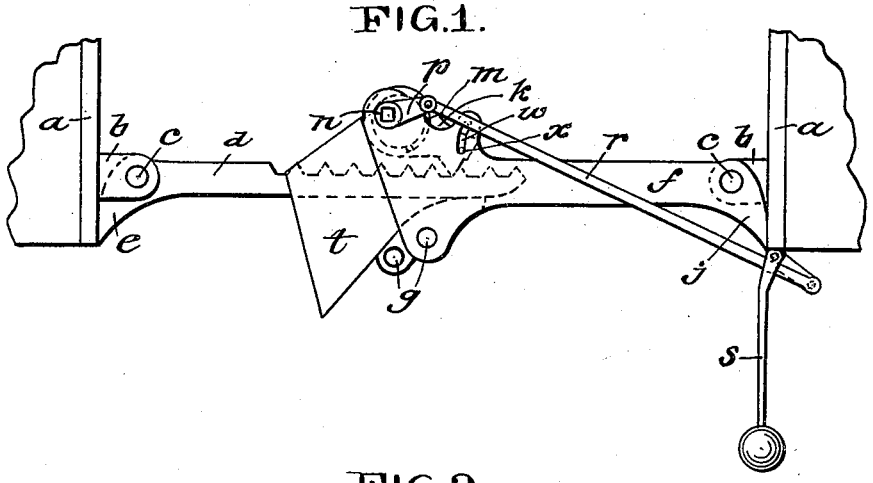


FIG. 2.

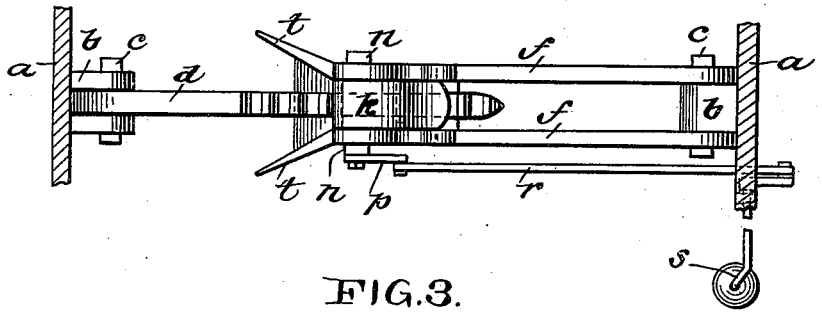


FIG. 3.

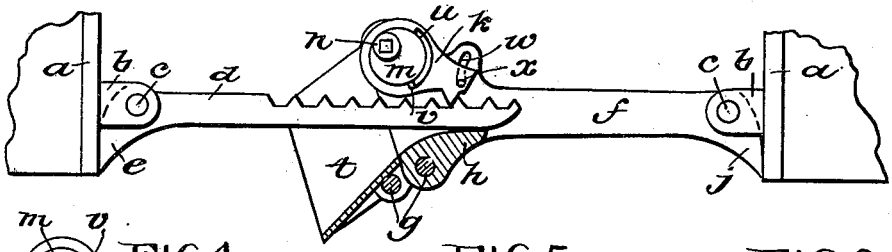


FIG. 4.

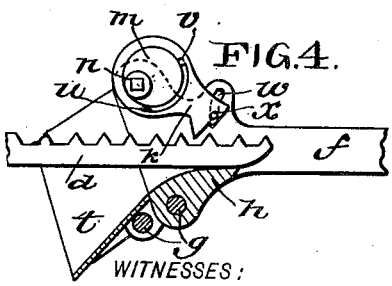


FIG. 5.

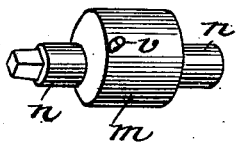
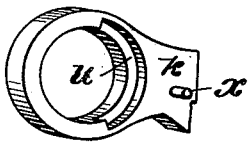


FIG. 6.



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THOMAS HENRY PATCHING, OF STRATHFIELD, NEW SOUTH WALES.

AUTOMATIC COUPLING.

SPECIFICATION forming part of Letters Patent No. 648,780, dated May 1, 1900.

Application filed July 22, 1899. Serial No. 724,840. (No model.)

To all whom it may concern:

Be it known that I, THOMAS HENRY PATCHING, tailor, residing at Strathfield, in the Colony of New South Wales, have invented certain new and useful Improvements in Automatic Couplings for Use on Railway-Carriages and the Like; and I do hereby declare the following to be a full, clear, and exact description of said invention, such as will enable others skilled in the art to which it most nearly appertains to make, use, and practice the same.

My invention relates to improvements in couplings for railway rolling-stock, one object being to provide a coupling whereby the rolling-stock of railways may be automatically connected when the vehicles are run together.

The coupling is so devised as to be more simple in construction and certain in action than any hitherto invented.

A further object is to provide a coupling possessing the aforesaid merits which can be disconnected without necessitating the operator going between the carriages.

My invention consists of a ratchet-bar hinged to a draw-bar of ordinary construction, hereinafter called the "male" coupling, and a "female" coupling so constructed as to receive and retain the same. This female portion consists of two metal bars of peculiar construction, as hereinafter described, similarly hinged to a draw-bar of ordinary construction and having between them an eccentric pawl which is operated by means of a lever.

In order that my invention may be clearly understood, I will refer to the accompanying drawings, in which similar letters of reference indicate the same parts in all the figures.

Figure 1 is an elevation showing the coupling in operation. Fig. 2 is a plan of Fig. 1. Fig. 3 shows the coupling with one side of the female portion removed. Fig. 4 is a detail view of the coupling, showing the pawl out of contact with the teeth of the bar and in position to be lifted by the further movement of the eccentric. Fig. 5 is an enlarged view of the eccentric. Fig. 6 is an enlarged view of the pawl.

a a are the ends of the two vehicles to be coupled.

b b are the draw-bars to which the couplings are hinged.

c c are the pins by means of which the couplings are attached to the draw-bars.

d is a ratchet-bar which forms the male coupling. This bar is provided with an arm or angle-bracket *e*, which rests against the end of the vehicle to which the bar is attached for the purpose of maintaining it in a horizontal position. The teeth of this ratchet-bar are shown in the drawings triangular in form; but I do not confine myself to teeth of any particular shape, as under varying conditions teeth of different forms may be found desirable.

f f are two bars which form the body of the female coupling. The end of each of these bars expands into a bracket-head, through the lower portion of which pass the pins *g g* for the purpose of securely joining them together, as shown. The said bars are here shown parallel to one another; but it may be found desirable to make them slightly wider apart at the bracket ends to allow for greater play. These bars are also provided with arms or angle-brackets *j j*, which rest against the end of the vehicle to which they are attached.

h is a guide-block on which the male coupling rests when in action and which also forms a distance-piece between the bracket-heads of the bars aforesaid.

k is a pawl revolving on an eccentric *m*, suspended on trunnions between bracket-heads, as shown in Fig. 3.

n n are the aforesaid trunnions, which revolve in bearings formed in the top portions of the bracket-heads.

p is a crank-arm keyed to one of the trunnions.

r is a connecting-rod pivoted at one end to the crank-arm *p* and suitably connected at the other by any of the well-known methods, so as to be easily operated by a weighted handle or lever *s* or any suitable attachment, which may be placed on the side of the vehicle or in any other convenient position.

t t are converging guide-plates for the purpose of directing the male coupling *d* between the bracket-heads of the bars *f f*.

x x are guide-pins fixed on each side of the

pawl, working in suitable inclined slots *w w*, provided on the bracket-heads, for the purpose of directing and controlling the course of the pawl when lifted by the eccentric from contact with the toothed bar *d*.

u is a concentric slot or groove in the side of the pawl *k*. This slot may be on both sides of the pawl, if found desirable.

v is a pin in the periphery of the eccentric *m*, which fits into and travels in the slot *u*.

The method of operating my invention is as follows: When the vehicles are pushed together, the male coupling *d*, being directed by the guide-plates *t t*, enters between the bars *f f*, the pawl *m* riding over the teeth until further progress is stopped by the buffers. This automatically completes the coupling. When in this position, the coupling is securely locked and it is impossible to withdraw the ratchet, as from the relative positions of the teeth and the pawl the strain comes on the dead-center. The gripping-faces of the teeth may be slightly rounded, so as to allow of the male coupling having freer play without strain when the vehicles are going round a curve. In order to uncouple the vehicle, the eccentric *m* is rotated by the crank-arm, which movement gradually draws the pawl back from contact with the teeth of the male coupling, and the pin *v* coming in contact with the end of the slot *u*, in which it travels, the pawl is lifted clear and the vehicles disconnected. It is obvious that a pawl operated by an eccentric such as hereinbefore described can be easily withdrawn from contact with the teeth of the ratchet no matter how great the draft strain may be.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. In an automatic coupling for use on railway-carriages and the like, the combination with a coupling-section comprising a toothed bar, of a coupling-section having two spaced side bars, between which the toothed bar is adapted to extend, an eccentric provided with trunnions mounted to turn in the said side bars, a pawl mounted on the eccentric and actuated thereby, a crank-arm on one of the trunnions of the eccentric, a rod pivoted at one end to the crank-arm, and means for actuating the said rod, substantially as described.

2. In an automatic coupling for use on railway-carriages and the like, the combination with a toothed bar hinged at one end to a draw-bar, and provided at its hinged end with an arm adapted to engage the end of the vehicle to hold the bar in a horizontal position, of two bars secured together and arranged approximately parallel with each other, the said bars being hinged to a draw-bar on the other vehicle and provided at their hinged ends with arms to engage the vehicle to which they are attached, the other ends of said bars being provided with heads, an eccentric provided with trunnions mounted to turn in bearings in the upper part of said heads, a pawl mounted to turn on said eccentric and adapted to engage the toothed bar, a guide-block between the said heads at the lower part thereof and on which the toothed bar is adapted to rest, and converging guide-plates for directing the toothed bar between the heads, substantially as shown and described.

3. The combination with the two sections to be coupled, of a toothed bar carried by one section, bars carried by the other section and spaced apart, the outer ends of said bars being enlarged forming bracket-heads, a pawl located between the bracket-heads and arranged to engage the toothed bar, and an eccentric by which the pawl is actuated.

4. The combination with a coupling-section comprising a toothed bar, of a second coupling-section provided with a guide on which the toothed bar is adapted to rest, a pawl located above the guide and arranged to engage the toothed bar, and an eccentric by which the pawl is actuated.

5. The combination with two sections to be coupled, of a pawl carried by one section and arranged to engage and hold the other section, an eccentric on which the pawl is mounted and by which it is actuated, and a pin-and-slot connection between the pawl and the section carrying the same for directing and controlling the course of the pawl when lifted.

6. The combination with two sections to be coupled, of a pawl carried by one section and arranged to engage and hold the other section, an eccentric on which the pawl is mounted and by which it is actuated, the said eccentric being provided with a peripheral pin arranged to travel in a slot in the pawl, the coupling-section carrying the pawl being provided with inclined guide-slots, and guide-pins on each side of the pawl and extending into said inclined guide-slots.

In testimony whereof I have hereunto set my hand this 15th day of May, 1899.

THOMAS HENRY PATCHING.

Witnesses:

T. C. ALLEN,

WALTER SIGMONT.