

May 30, 1933.

H. S. BECKER

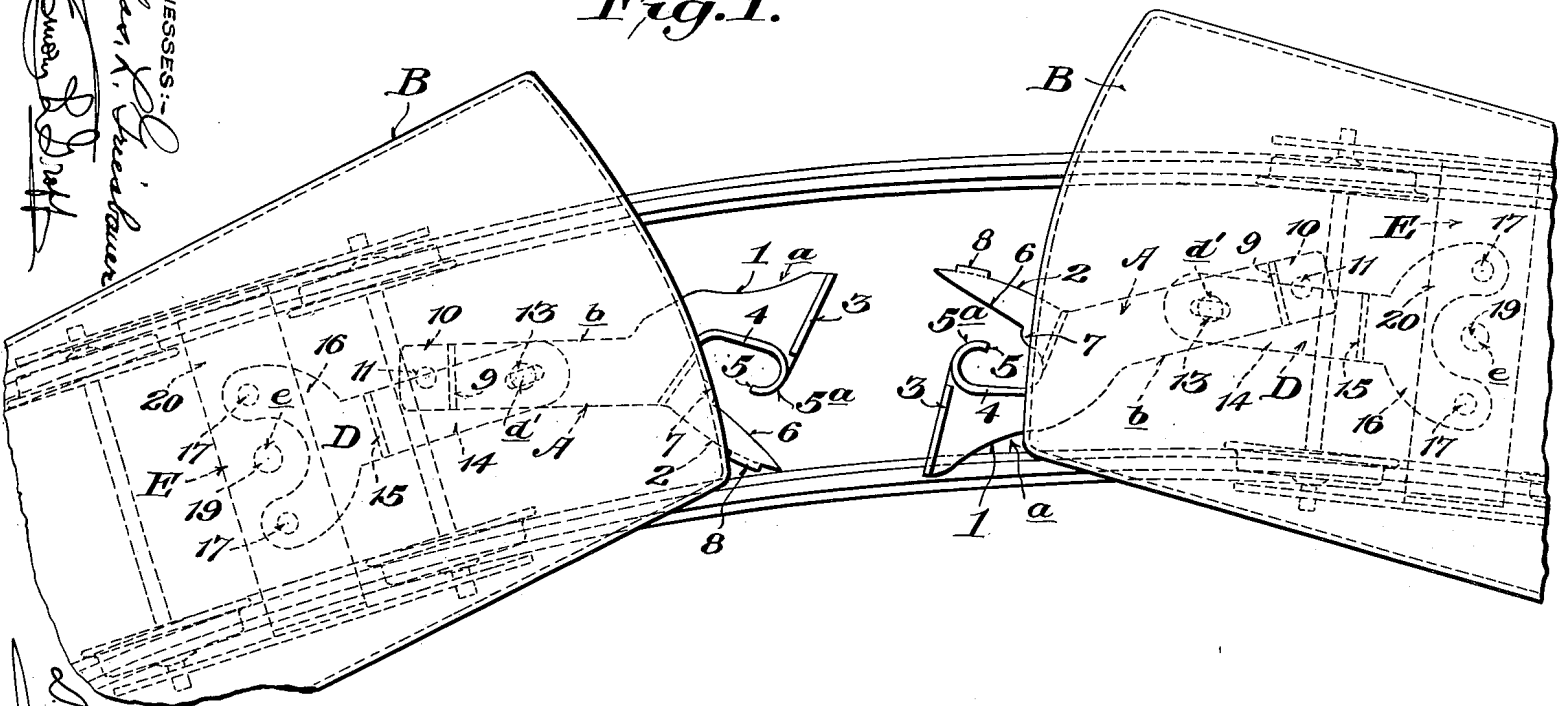
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AUTOMATIC COUPLER FOR TOY CARS

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3 Sheets-Sheet 1

Fig. 1.



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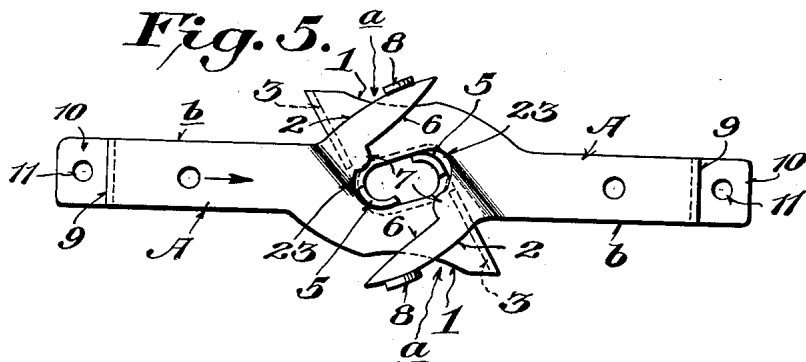
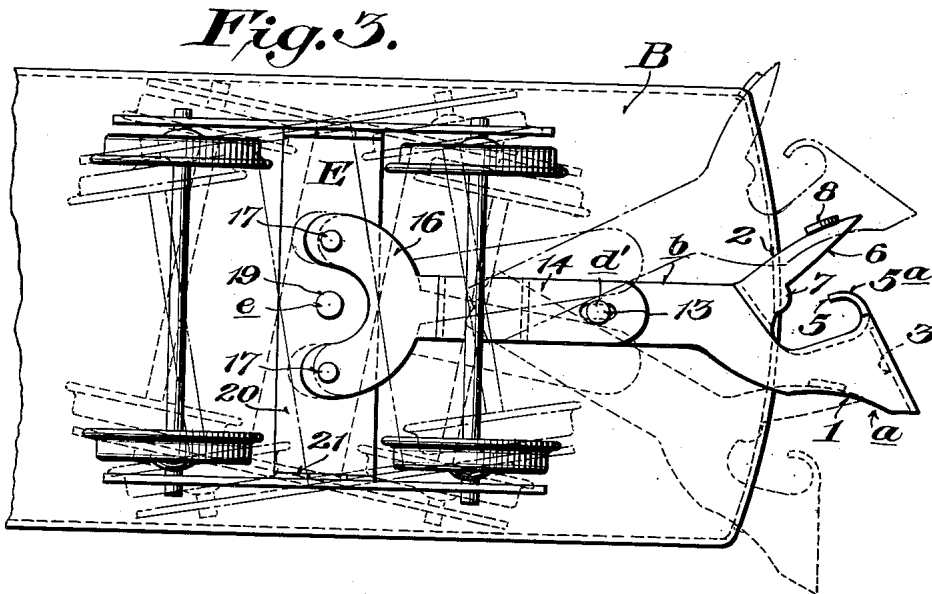
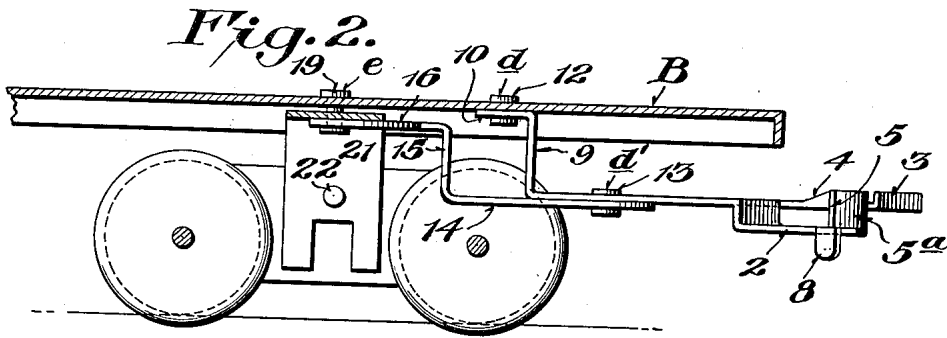
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AUTOMATIC COUPLER FOR TOY CARS

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3 Sheets-Sheet 2



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AUTOMATIC COUPLER FOR TOY CARS

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3 Sheets-Sheet 3

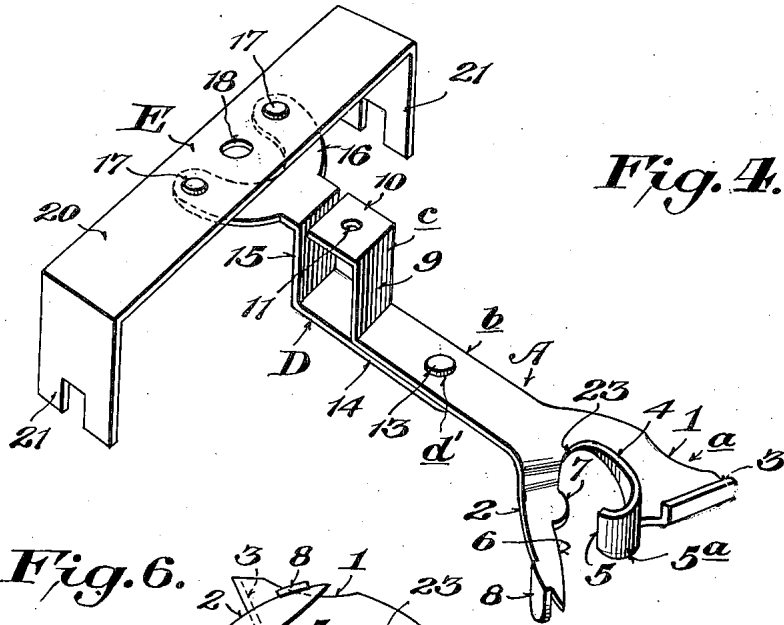


Fig. 4.

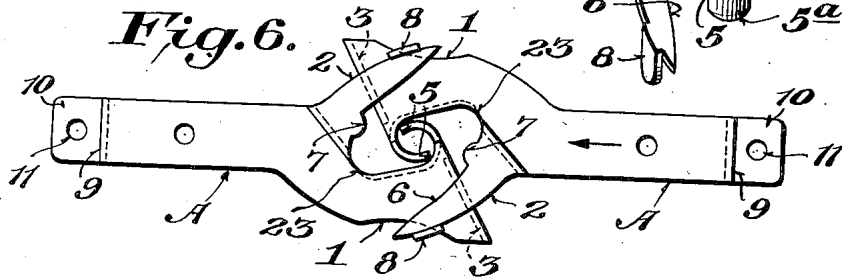


Fig. 6.

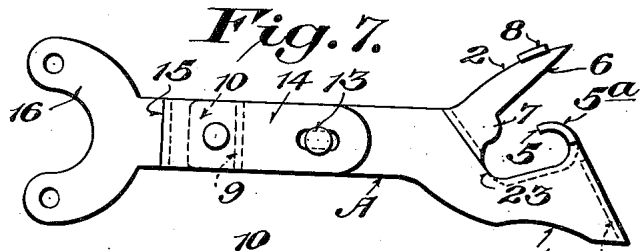


Fig. 7.

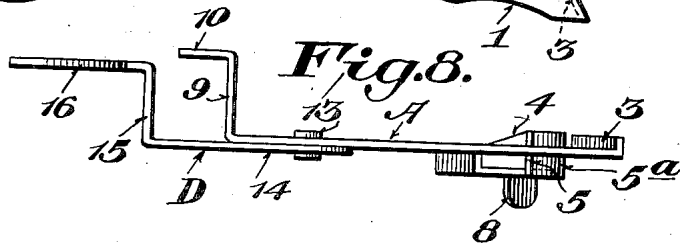


Fig. 8.

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# UNITED STATES PATENT OFFICE

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## AUTOMATIC COUPLER FOR TOY CARS

Application filed January 2, 1929. Serial No. 329,751.

This invention relates to toy railways and more particularly to a novel coupler for automatically connecting toy cars, including locomotives, to form a train.

5 A primary object of the invention is to provide a coupler suitable for use at both ends of a toy car or locomotive and which coupler will become automatically connected with a similar coupler on either end of an adja-  
10 cent car.

A further object of the invention contem- plates the connection of the type of coupler embodying this invention to a car body and its associated truck so that couplers on the  
15 approaching ends of adjacent cars will be automatically positioned, whereby intercon- nection without manual manipulation will be assured. With the present type of cou-  
20 pler, approaching cars will be automatically coupled irrespective of the respective angles of adjacent cars, while traveling on straight or curved sections of toy tracks. With the  
25 advent of remotely controlled locomotives the need for such a coupling device becomes increasingly apparent.

A still further object of the invention is to provide a coupler of a single part which is formed at its coupling end in such  
30 a manner as to cooperate with its counter- part without necessitating the use of extra parts, such as springs, pins, etc.

Another object of the invention is to pro-  
35 vide a simple, practical and reliable con- struction that is economical to manufacture, easy to assemble and positive in its opera- tion.

With the above and other objects in view which will more readily appear as the na-  
40 ture of the invention is better understood, the same consists in the novel construction, combination and arrangement of parts here- inafter more fully described, illustrated and  
45 claimed.

A preferred and practical embodiment of

the invention is shown in the accompanying drawings, in which:

Figure 1 is a plan view showing the adja- cent ends of two cars on a section of a track, the said cars being equipped with the present improvements and the couplers on each  
50 car being in readiness to engage.

Figure 2 shows in vertical section through the end of a car and truck with a coupler disclosed in side elevation attached thereto.  
55

Figure 3 is a bottom plan view of one end of a car and its associated truck with a coupler attached to the same, the view illus- trating in dotted line various positions as-  
60 sumed by the truck and coupler.

Figure 4 is a perspective view of a coupler and the actuating element connected thereto and to a frame part of a truck.

Figure 5 is a bottom plan view of two couplers interconnected and located in the relative positions they assume when a car  
65 equipped with one of the couplers is push- ing a car equipped with the other coupler.

Figure 6 is a similar view to Fig. 5 but discloses the couplers arranged in the po-  
70 sitions assumed when one car is pulling the other.

Figure 7 is a bottom plan view of one coupler with its associated actuating mem-  
75 ber.

Similar reference characters designate cor- responding parts throughout the several figures of the drawings.

As shown, the automatic coupler embody- ing this invention consists of a one-part  
80 coupler A which includes a coupling end *a* at one end of a shank *b* which has an attach- ing end *c*. The said attaching end is adapted to be pivotally connected to the  
85 body portion of a car B, as at *d*. The coup- ler further includes an actuator D which is pivotally connected to the coupler A as at *d'* and is rigidly attached to a truck frame E. The truck frame in turn is pivotally con-  
90 nected to the body of the car B, as at the

point *e*. This manner of mounting a coupler upon a toy train will cause the coupler end *a* to be properly positioned with respect to a coupler carried on an adjacent car end 5 irrespective of the relative angles of the said cars.

By considering the various figures of the drawing, it will be noted that the coupler end *a* of a coupler A consists of two dis- 10 similar branches 1 and 2. The branch 1 extends generally in the direction of the length of the coupler shank *b* and has an end flange 3 which is turned upwardly with respect to the plane of the branch. This flange 3 fur- 15 thermore is positioned obliquely of the length of the branch 1 with its inner end positioned closer to the shank portion *b* than its outer end. The inner edge of the branch 1 is formed with an upwardly directed 20 flange 4 which terminates at its outer end in a hook shaped portion 5. This hook shaped portion has a part 5*a* which depends below the plane of the branch 1 to approx- 25 imately the plane of the branch 2, the said branches 1 and 2 being vertically offset with respect to one another as shown, with the branch 2 disposed in a horizontal plane below the plane of the branch 1, whereby, 30 when two of the coupling elements are moved together as shown in Figs. 5 and 6, the branches 2, 2 underlie the branches 1, 1 respectively.

The branch 2 of the coupling end *a* has an inner edge 6 diverging laterally from the 35 axis of the coupler shank *b*. This edge is formed with a rounded lug 7. The function performed by this lug will be set forth at a later point. Depending from the outer edge of the branch 2 near the outer end of 40 said branch is a lip 8 which acts as a finger engaging piece for manually disconnecting two interconnected couplers.

The attaching end *c* of the shank *b* consists of a vertical portion 9 having at its 45 upper end a horizontal portion 10 apertured at 11 for receiving a rivet, or the like 12, by means of which the coupler A is pivoted to the car body B at the point *d*.

Pivoted to the shank *b* of the coupler A, 50 as by means of a rivet or the like 13, is the horizontal end portion 14 of the actuator D. This end portion underlies the shank *b* of the coupler and has a perpendicular portion 15 extending in parallelism with 55 the portion 9 of the coupler. The upper end of the perpendicular portion 15 is formed with a horizontal bifurcated part 16 having the furcations permanently attached to the truck frame E by the rivets, or the like, 60 17.

The frame E is apertured at 18 for the reception of a pivot pin 19 which passes through the body B of a car. At the oppo- 65 site ends of the central portion 20 of the frame E are the depending lugs 21. Fig. 2

clearly illustrates the lugs 21 as being secured to a truck by a rivet or the like 22.

With the arrangement shown, it will be apparent that the coupler part will always 70 be held in proper position by the trucks so that cars may automatically couple on curves as well as on straight sections of tracks or on adjacent curved and straight sections of tracks. The coupler A also is always main- 75 tained in a horizontal plane and pivots in that plane.

Upon the approach of two cars, both of which may be moving or one moving and the other standing still, the depending por- 80 tion 5*a* of the hooked part 5 of one coupler will engage the inner edge 6 of the branch 2 on the opposing coupler. This engage- ment of a part 5*a* with a branch 2 will cause the curved part 5 to travel inwardly along 85 the edge 6 until the hooked part 5 reaches the point of divergence 23 between branches 1 and 2. Fig. 5 discloses the hook shaped parts 5 on adjacent couplers in engagement with the points 23. The connected couplers 90 will remain in this relative position as long as one car is pushing another. Should the pushing car change its direction of move- ment while the hooked portions 5 of the 95 two couplers are engaging the points 23, the said hooked portions will travel along the opposed flange 4 until the said hooked portions are in contact with each other, as illustrated in Fig. 6.

Due to the angular position of the end 100 flange 3 on the branch 1, the said flange 3 will aid in directing the hooked part 5 on an approaching coupler end *a* toward the branch 2 whereby it will be guided by said branch into proper coupling position.

When it is desired to effect uncoupling 105 of the cars, a slight pressure exerted in converging directions upon the lugs 8 of the two opposing couplers will cause the hooked portions 5 to disengage each other, thus re- 110 leasing the two couplers and disconnecting adjacent cars.

It is possible for the hooked portions 5 to become disengaged and thus release the cars from coupling confinement during the 115 movement of a train, at the moment of cutting off power from an attached locomotive, when the couplers are at their widest points of divergence, due to the trucks of one car traversing a curved section of track 120 while the trucks of the following car are still traversing a straight section of track. This objection is overcome, however, by the action of the rounded lug 7 on the outside 125 edge of the hooked portion 5 on the opposing coupler. When, as above outlined, the train is traversing a certain section of track comprising a combination of straight and curv- 130 ed track sections, and the source of motive power supplying the locomotive is cut off, the natural tendency of the coupled cars is

to continue their movement and to crowd against each other due to the tendency of the relatively heavy locomotive to come to a stop more quickly than the cars. When this occurs the couplers move towards each other until the flanges 6 engage the rounded surfaces 23 with the result that the wedging or cam action of said flanges against said surfaces tends to throw the couplers relatively outward to an uncoupled position. However, when the flanges 5 reach the rounded surfaces 23 the lugs 7 then cooperate with said flanges to hold the couplers against outward movement and the cars thus are maintained coupled.

Without further description, it is thought that the features and advantages of the invention will be readily apparent to those skilled in the art, and it will of course be understood that changes in the form, proportion and minor details of construction may be resorted to, without departing from the spirit of the invention or the scope of the appended claims.

I claim:—

1. A car coupler comprising a flat horizontal shank forked at its outer end to provide a pair of laterally divergent branches one of which is disposed in the plane of the shank and the other of which is downwardly offset relative to the plane of the shank whereby said branches are adapted, respectively to overlie and underlie related branches of a counterpart coupler, the first mentioned branch being upwardly flanged at its outer end and said flange extending diagonally inwardly towards the second mentioned branch, the inner edge of the first mentioned branch having a flange extending above and below the plane of said branch and said flange terminating at the outer end of said branch in an inwardly opening hook formation disposed approximately in the medial vertical plane of the shank and having its free end disposed rearwardly of its medial rear face for cooperation with the hook formation of a companion coupler, and a protuberance projecting from the inner edge of the second mentioned branch to be engaged by the hook formation of a companion coupler to hold the hook formations of the couplers alined during buff.

2. An automatic coupler for toy cars comprising a one-piece shank member forked at its outer end to provide two laterally divergent branches one of which is downwardly deflected relative to the horizontal plane of the shank and of the other branch, the undeflected branch being provided at its inside corner with an inwardly opening hook projecting above and below the plane of said undeflected branch and into the plane of the deflected branch and having its free end disposed medially in the

space between the two branches, said undeflected branch being also provided outside of its hook with an oblique outer edge, the said downwardly deflected branch of the coupler shank being provided at its inside edge with a guard projection for engagement with the hook of the companion coupler.

In testimony whereof I hereunto affix my signature.

HARRY S. BECKER.

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