Feb. 5, 1935. LE ROY H. HOFFER ET AL 1,989,804

TOY CAR COUPLER

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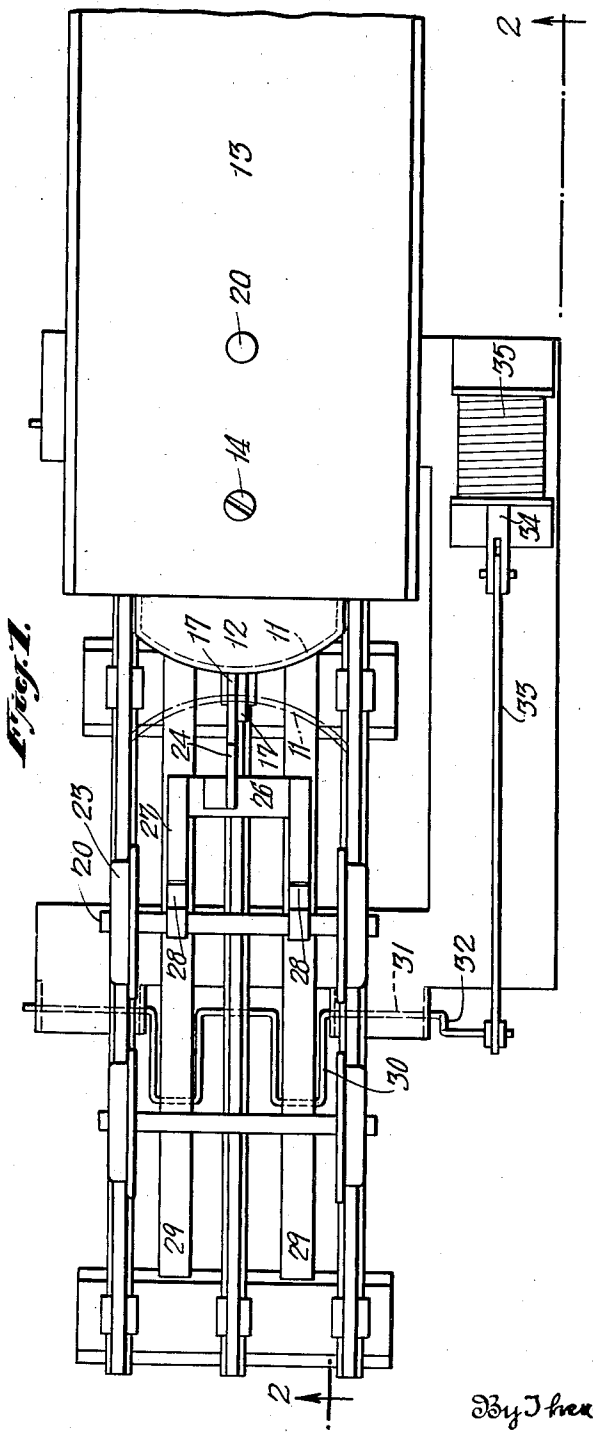


Fig. 1.

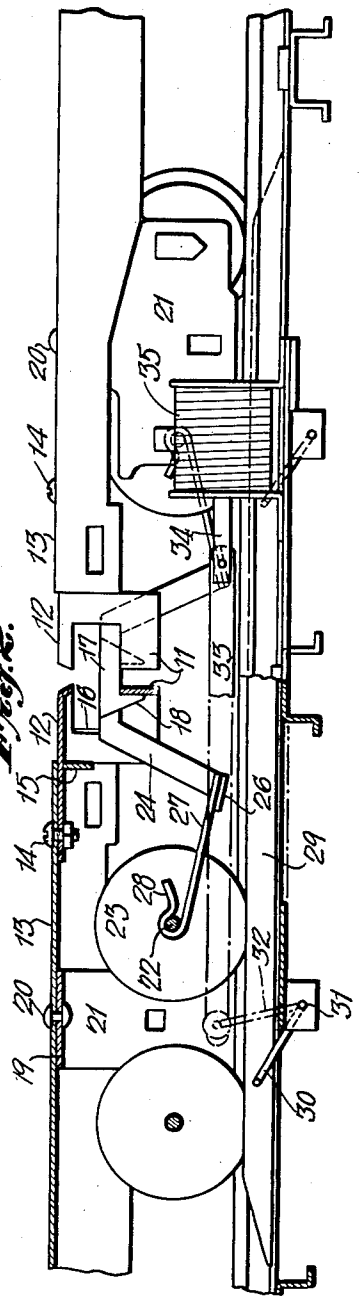


Fig. 2.

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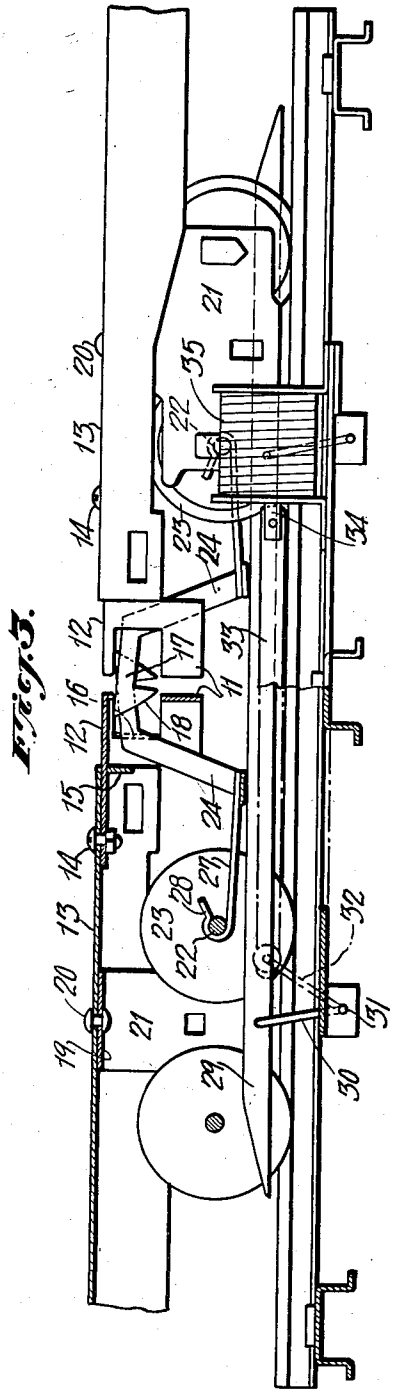


Fig. 3.

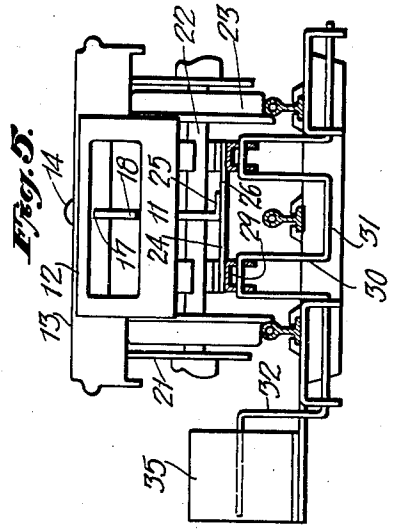


Fig. 5.

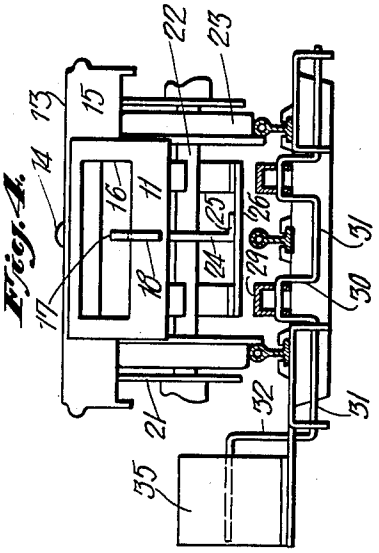


Fig. 4.

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Fig. 8.

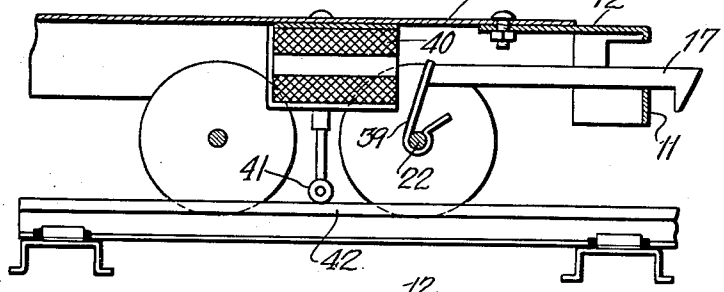


Fig. 9.

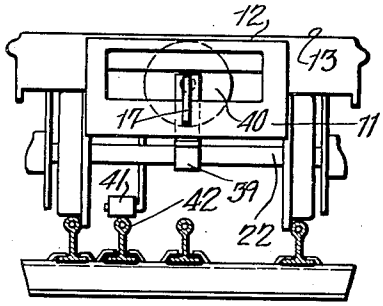


Fig. 6.

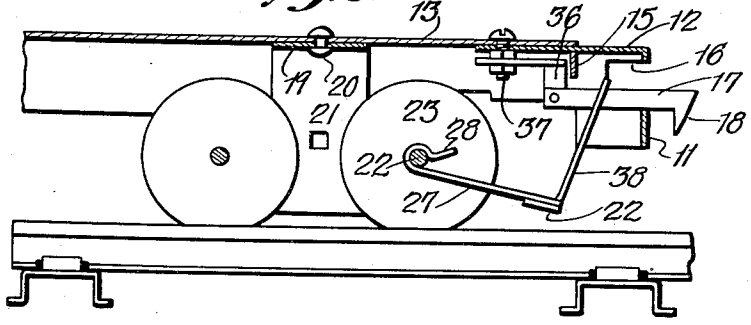
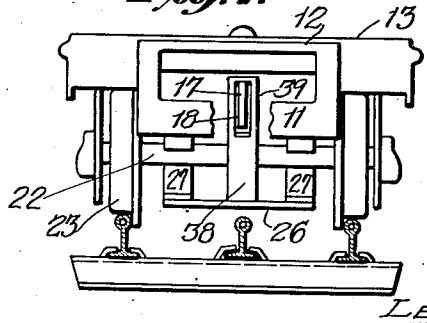


Fig. 7.



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UNITED STATES PATENT OFFICE

1,989,804

TOY CAR COUPLER

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Application February 10, 1930, Serial No. 427,245

6 Claims. (Cl. 213—212)

The invention relates to couplers for toy railway cars. A simple construction is designed for centering them and for automatically coupling them. The improved coupler is readily and economically applicable to toy cars of standard commercial types. The accompanying drawings illustrate embodiments of the invention.

Fig. 1 is a plan showing the floor of one car and the truck of the next car.

Figs. 2 and 3 are side elevations of the same partly in section.

Figs. 4 and 5 are end views of one car with the uncoupling mechanism in different positions.

Fig. 6 is a longitudinal section and Fig. 7 an end view illustrating an alternative construction.

Figs. 8 and 9 are similar views illustrating another alternative construction.

Each end of a car is provided with a hook and a keeper adapted to be engaged by the hook of the next car to couple the cars together. The hook is pivoted and has a cam face which engages the opposite keeper to lift the hook and drop it over the edge of the keeper. The hook is held in longitudinal alignment with the truck, that is, parallel to the length of the truck, so that the cars will readily couple whether on a straight or a curved portion of the track. The keeper 11 is a piece of sheet metal bent down into the vertical plane and convex in plan, being curved in approximately a circle about the vertical axis of the end truck. The upper horizontal portion 12 of the keeper is fastened to the end of the floor 13 by means of a bolt 14. It extends through the end flange 15 of the floor and is thus held rigidly in place. It has a slot 16 extending horizontally so that as the cars swing around a curve the keeper will continue to face the opposite hook.

A hook 17 is arranged to extend through the slot 16 a sufficient distance to engage the opposite keeper. Each hook has a cam face 18 which when the cars come together engages the opposite keeper 11. The hook is thus lifted and passed through the slot and dropped into engagement with the keeper as in Fig. 2.

The trucks comprise a plate 19 connected by a vertical pivot 20 with the car floor and having side flanges 21 which carry the ends of the axles 22 on which the car wheels 23 are carried.

The hooks should be kept in longitudinal alignment with the truck as the latter pivots in going around a curve. This makes coupling easier on curves and lessens any lateral strain on the couplings as the cars swing around a curve. Each hook is a strip of sheet metal lying in a vertical plane which, according to Figs. 1 to 5, has a rear downward extension 24 with a flange 25 (Fig. 4) fastened into a cross-bar 26. The ends of the supporting arms 27 are welded or otherwise fastened to the ends of the cross-bar 26. At the opposite ends of these supporting arms they are formed with hooks 28 by which they are supported on the forward axle 22. Thus we have bearings at points widely separated which hold the hook in longitudinal alignment while permitting it to rise and fall freely.

This method of supporting the hooks makes it easy to adapt them for uncoupling by remote control mechanism. For this purpose a certain section of the track carries shoes 29 which are supported at their ends on crank arms 30 on cross shafts 31, so that they rise and fall with a parallel motion when either shaft is rocked. One of the shafts 31 has an upward arm 32 at the side of the track which is pivotally connected at its upper end to a link 33 which is connected to the armature 34 of an electro-magnet 35 controlled from any suitable location.

As the train passes over the indicated section of the track, the operator can close the circuit, throw the shoes 29 up and uncouple the cars at any desired point. The shoes 29 are long enough to span the adjacent end trucks of two cars so as to lift the hooks of both cars. Generally the uncoupling station is on a siding and when the cars are uncoupled the engine will be reversed to break the train at this point.

In the alternative construction of Figs. 6 and 7, the hook 17 is pivoted on a bracket 36 to swing vertically, and the bracket is pivoted on the bolt 37 to swing horizontally, this same bolt being used to fasten the keeper to the floor 13. The hook is centered by means of a bar 38 having at its upper end a slot 39 (Fig. 7) through which the hook passes loosely to permit a slight lateral play. The centering bar 38 is mounted on the cross-bar 26 which is carried on the outer ends of the rocking arms 27. This apparatus is uncoupled in the same way as that of Figs. 1 to 5.

A simpler construction is shown in Figs. 8 and 9. The hook 17 extends back and is fast at its rear end to an arm 39 which has a rocking engagement with the axle 22. The rear end of the hook constitutes the armature of an electro-magnet 40 mounted under the floor so that when the armature is energized the arm 39 is rocked backwards and the hook swung upward to uncoupling position. The solenoid carries a collector shoe 41 adapted to engage a fourth rail 42 installed in

a special section of the track and preferably made a little higher than the other rails. Each truck is equipped as described. The train is run onto the special track section, the circuit closed to lift the hooks and the engine actuated to separate the cars.

With this sort of coupling mechanism, the hook may be shaped differently from that illustrated. In fact, each of the shapes and constructions illustrated may be considerably varied, both for the keeper and for the hook. The invention provides a very simple and cheap device which is nevertheless rugged and durable and contributes an interesting feature to toy trains, besides perfecting the coupling operation, as compared with the devices now generally used.

What we claim is:

1. A car coupling device comprising an arcuate keeper member and a hook member, the said keeper member being disposed upon a car end with the said arc thereof lying in a horizontal plane below and substantially parallel to the car floor and the said hook member being disposed substantially along the center longitudinal axis of said car with the hook end thereof resting upon and extending beyond the said keeper a distance adapting the hook end to engage with the keeper member of an adjacent car and with the opposite end thereof united to means pivotally supported upon a car wheel axle of the car truck adjacent said car end.

2. In combination with the car coupling device described and claimed in claim 1, mechanically operative means adapted to be energized by electrically operative means under remote control to move said hook member vertically about its pivoted axis.

3. A car coupling device comprising an arcuate keeper member and a hook member, the said keeper member being disposed upon a car end with the said arc thereof lying in a horizontal plane below and substantially parallel to the car floor and the said hook member comprising a horizontally disposed arm having a cam faced hook at one end and a downwardly extending extension arm at the opposite end, the end of said extension being united to a cross bar, the ends of said cross bar being approximately equidistant from said extension, and a pair of supporting arms united to said cross bar, said arms each terminating in hook members pivotally engaging a wheel axle of a car truck.

4. A car coupling device comprising an arcuate keeper member and a hook member, the said keeper member being disposed upon a car end with the said arc thereof lying in a horizontal plane below and substantially parallel to the car floor and the said hook member being vertically pivoted at one end to a pivoted bracket to the car floor, the hook end thereof resting on the said arcuate keeper and extending beyond the said car end a sufficient distance to engage the keeper on an adjacent car, a downwardly extending centering bar thereon, a cross bar attached to the bottom of said bar, and rock arms terminating in hooks pivotally engaging a car wheel axle attached to said cross bar.

5. A car coupling device comprising an arcuate keeper member and a hook member, the said keeper member being disposed upon a car end with the said arc thereof lying in a horizontal plane below and substantially parallel to the car floor and the said hook member having the hook end thereof resting upon and extending beyond the said keeper a sufficient distance to engage the keeper of an adjacent car, and the opposite end thereof engaging an arm having a rocking engagement with the wheel axle of a car truck adjacent the car end, said opposite end constituting the armature of an electro-magnet adapted to be energized by remote control means to rock said arm backwards and thereby vertically lift the said hook end out of engagement with the keeper member of an adjacent car.

6. In a toy train track system means adapted to be energized by means under remote control to uncouple a train of cars on said system, said means comprising elongated shoe members disposed between the tracks along a track section having a length approximating a car length, said shoe members being connected to crank arms on cross shafts to thereby be vertically movable upon a rotation of said shaft, and means adapted to be energized by remote control to rotate said shaft, the said shoe members in their elevated position contacting with a pivoted hook member of a coupling device linking said cars to lift the said hook member vertically about its pivoted axis into an uncoupling position.

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