Nov. 13, 1951 C. K. EDWARDS ET AL 2,574,630

COUPLER FOR TOY CARS AND RELEASING MEANS

Filed Nov. 10, 1949 2 SHEETS—SHEET 1

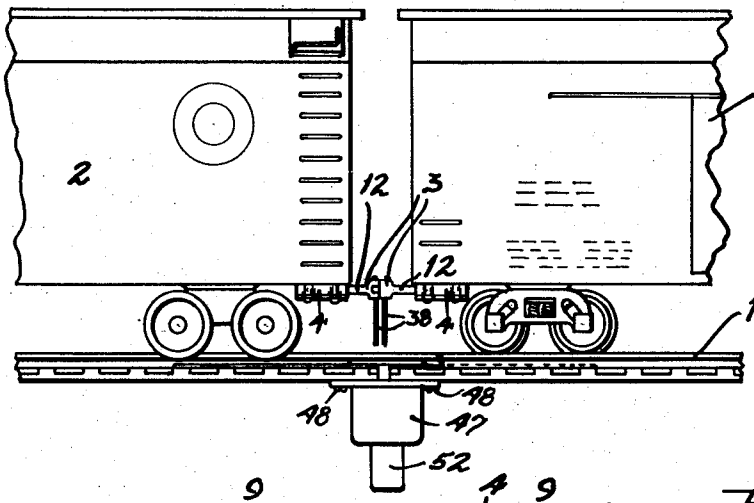


Fig. 1

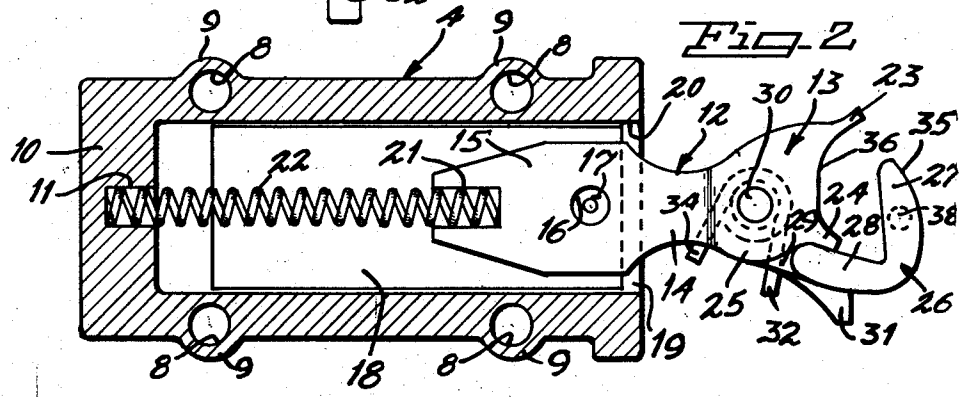


Fig. 2

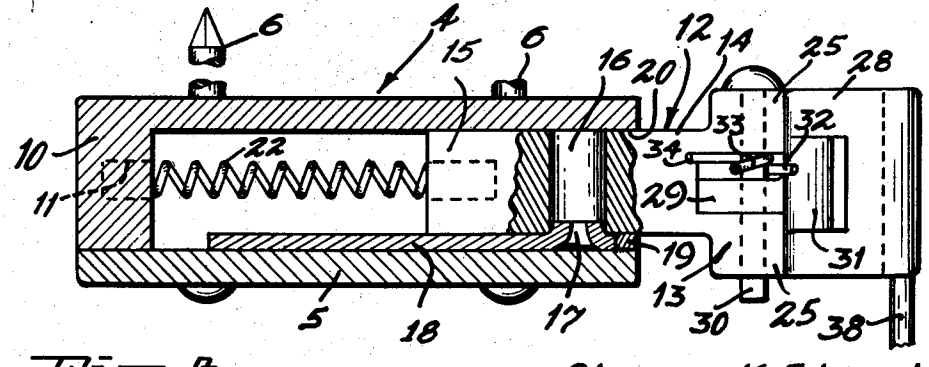


Fig. 3

Clarence K. Edwards
Lawrence D. Edwards
Inventors

By Glenn L. Fish
Attorney

Nov. 13, 1951 C. K. EDWARDS ET AL 2,574,630

COUPLER FOR TOY CARS AND RELEASING MEANS

Filed Nov. 10, 1949 2 SHEETS—SHEET 2

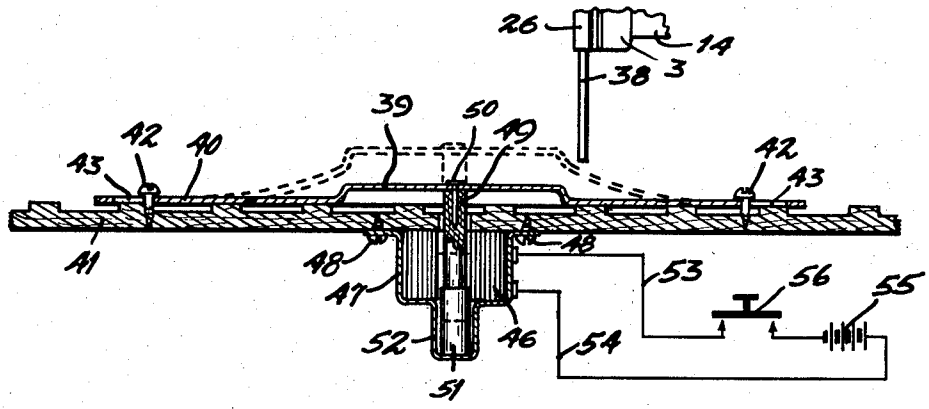


Fig. 4

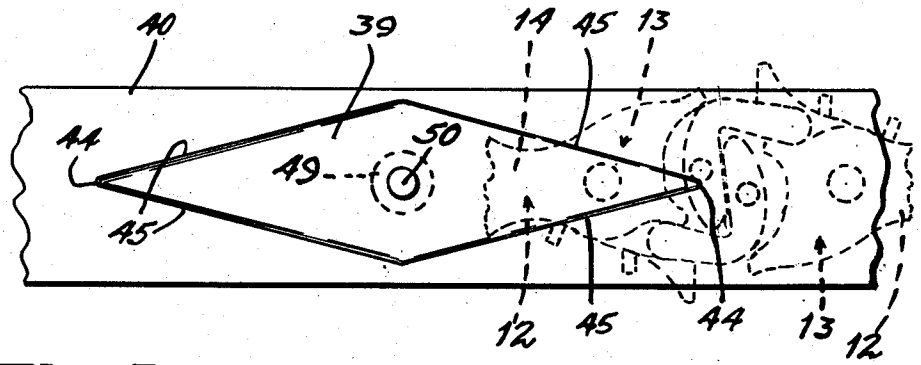


Fig. 5

Clarence K. Edwards
Lawrence D. Edwards
Inventors

By Glenn L. Fish
Attorney

Patented Nov. 13, 1951

2,574,630

UNITED STATES PATENT OFFICE

2,574,630

COUPLER FOR TOY CARS AND RELEASING MEANS

Clarence K. Edwards and Lawrence D. Edwards, Spokane, Wash.

Application November 10, 1949, Serial No. 126,618

5 Claims. (Cl. 213—212)

1

This invention relates to couplers for railway cars of the toy or model type and it is one object of the invention to provide cars of a toy railroad with couplers of such formation that when cars are brought together couplers carried by confronting ends of the cars will automatically engage each other and prevent separation of the cars until the couplers are intentionally released.

Another object of the invention is to provide a coupler which may have tilting movement transversely of a car to which it is secured and thus allow coupled cars to follow curves in a track without their couplers becoming accidentally detached from each other.

Another object of the invention is to provide a coupler having a jaw which may be manually moved to a released position or automatically released by action of a member mounted at a selected place along a track.

Another object of the invention is to provide automatic coupler releasing means consisting of a cam member which is normally in an inoperative position and is movable to an operative position by action of an electrically energized member under control of a person operating a toy train having its cars equipped with the improved couplers.

Another object of the invention is to provide a coupler which is simple in construction and movable to a released position by electrically controlled means which is also of simplified construction.

The invention is illustrated in the accompanying drawings wherein:

Fig. 1 is a side elevation showing cars connected by couplers of the improved construction.

Fig. 2 is a horizontal sectional view upon an enlarged scale taken longitudinally through the improved coupling.

Fig. 3 is a longitudinal sectional view taken vertically through the coupler.

Fig. 4 is a sectional view taken longitudinally through the device for automatically releasing couplers.

Fig. 5 is a top plan view of the coupler releasing device.

The toy railroad has the usual track 1 and a number of cars 2 having couplers 3 at their opposite ends and of a duplicate construction so that either end of a car may be brought into engagement with either end of another car and connected therewith by interlocking engagement of their couplers.

The construction of the couplers is illustrated

2

in Figures 2 and 3 and referring to these figures it will be seen that the coupler has a casing 4 which is open at its outer end and also along its bottom. The bottom of the casing or housing is closed by a bottom plate or wall 5 which fits flat against lower edge faces of the side walls and the inner end wall of the casing and is held in place by nails 6 passed upwardly through openings in side edge portions of the plate and through openings 8 formed in thickened portions 9 of the side walls of the casing and driven into the bottom of the car to which the coupler is mounted. It will be understood that if the cars are formed of metal, bolts may be used instead of nails to hold the bottom plate and the casing in place. The inner end wall 10 of the casing is thicker than the side walls and in this thick end wall is formed a socket 11 which is open at its front end.

The shackle 12 is formed of metal or other suitable material and has a head 13 and a neck 14 by means of which it is connected with a shank 15, the shank being formed with a vertically disposed opening or socket 16 into which fits a boss 17 struck upwardly from a plate 18. The plate or liner 18 is of such width that it fits snugly in the casing and has its front end abutting a strip or bar 19 extending across the front end of the casing along the bottom of the opening 20 through which the shackle 12 passes. It should be noted that the shank is of considerably less width than the opening 20 and therefore the shackle may have transverse pivotal movement about the boss or pivot 17 and allow cars to follow a curve in the track 1 without causing the couplings to become detached from each other or wrenched loose from the cars. A socket 21 extends longitudinally of the shank from the rear end thereof and into this socket fits the front end of a helical spring 22 which extends longitudinally in the casing and has its rear end seated in the socket 11. This spring yieldably holds the shackle in axial alignment with the casing and returns it to its normal position after coupled cars have passed beyond a curve in a track.

Tongues or lips 23 and 24 project diagonally from opposite sides of the head 13 of the shackle 12 and at its side carrying the lip of ear 24 the head is formed with ears 25. A jaw 26 has a bill 27 extending transversely of the shackle and from this bill extends a shank 28 having an ear 29 which fits between the ears 25 and is pivotally mounted by a pin 30. The shank 28 is also formed with a lip 31 engaged by an end portion

or arm 32 of a spring 33 which is coiled about the pin and has its other arm 34 bearing against the shank 14 and causing the spring to have sufficient tension to yieldably hold the shackle in its normal position with its bill disposed transversely of the head 13. The outer or front face of the bill is curved, as shown in Figure 2, to form a cam surface 35 and at the outer or front end of the head is formed a transversely curved surface 36 extending to ends of the lips 23 and 24. Therefore when cars equipped with the improved couplers are brought together the bills of their shackles may be temporarily moved to a position allowing the bills to engage behind each other, as indicated by dotted line to Figure 5, and as their rear or inner surfaces 37 are flat they will have such engagement with each other that pull exerted upon the bills will not cause the jaws to separate when the coupled cars are in motion and rolling along the track. Manual separation of the couplers is accomplished by applying pressure to the lip 31 of one shackle in a rearward direction, thereby swinging the jaw of this coupling to a releasing position.

Automatic releasing of the couplers is accomplished by means of a cam mounted at a desired point along the track and movable into position for engagement by pins 38 extending downwardly from the bills of the shackles.

The cam 39 is a diamond shaped so that it tapers towards its opposite ends and consists of a portion struck upwardly from a strip or sheet 40 formed of a resilient sheet metal. This strip 40 extends longitudinally of the track midway the width thereof and is movably held in engagement with a bar 41 by screws or bolts 42 which pass through slots 43 formed in the strip longitudinally thereof and are of such length that when upward pressure is applied to the cam portion 39, the cam portion may be raised to the position indicated by dotted lines in Figure 4. The tips of the tapered ends of the cam 39 are exactly midway the width of the strip 40 whereas the depending pins 38 of connected couplers are in offset relation to each other transversely of the strip. Therefore when connected couplers pass over the cam the approached tip 44 of the cam will pass between the pins and engagement of inner side portions of the pins with the diverging side edges 45 of the cam will cause the shackles to be tilted outwardly away from each other and out of interfitting engagement with each other. Therefore the cars connected by the couplers will be disconnected. After the cars have been uncoupled the cam is allowed to resume its normal position flat upon the bar 41 and cars may pass over it without being uncoupled. A solenoid 46 housed in a casing 47 is disposed under the bar 41 where it is secured by screws or bolts 48, and from the center of the cam 39 extends a depending stem or rod 49 formed of non-conductive material and secured to the cam by a tack or equivalent fastener 50. This stem or rod extends downwardly through the spool of the solenoid and at its lower end carries a metal core 51 for the solenoid. The core is normally in the depending well 52 of the casing 47 but when the solenoid is energized the core is drawn upwardly and the rod 49 moves with it so that the cam is shifted upwardly to an operative position in which it may be engaged by the pins 38 of the couplers of connected cars and cause the cars to be released. Current is supplied to the solenoid by wires 53 and 54 connected with a battery or other source of electrical energy 55 and interposed in the wire 53 is a switch 56. When the switch is closed the cam will be moved to its operative position and when the switch is open the cam is in its lowered or inoperative position. Therefore a person operating a train of cars moving along the track may apply pressure to the switch to close it and cause couplers of connected cars to be released and then remove pressure from the switch so that the switch will open and allow other connected cars to pass over the cam without being uncoupled. When the train of cars is brought to a stop the couplers may be manually released as previously explained. It will thus be seen that the cars may be manually or automatically uncoupled.

Having thus described the invention, what is claimed is:

1. A car coupler comprising a housing adapted to be mounted under a car body longitudinally thereof and being open at its outer end and along its bottom, a bottom closure plate for said housing, a liner resting upon the closure plate within the housing and formed near its outer end with an upstanding boss located midway its width and integral therewith, a shackle extending longitudinally of said housing and having a shank extending into the housing through the outer end thereof and a head at the outer end of the shank, said shank being formed with a vertical bore located midway its width and into which said boss fits and pivotally mounts the shackle for transverse pivotal movement, a spring extending longitudinally in said housing inwardly of the shackle with its inner end seated in a socket formed in the inner end wall of the housing and its outer end seated in a socket in the inner end of the shank, said spring yieldably holding the shackle against transverse tilting movement, a jaw having a shank and a bill, a pin passing vertically through the shank of said jaw and the head of said shackle and pivotally mounting the jaw for movement transversely of the shackle, a spring about said pin yieldably holding the jaw in a normal position with its bill extending across the outer end of the head transversely thereof and in outwardly spaced relation thereto, said head having lips projecting from opposite sides of its outer end and having its outer end formed with a concaved transversely curved surface between outer ends of the lips, said bill having a transversely curved outer surface constituting a cam surface and a flat inner surface, and a lip projecting laterally from the outer side of the shank of said jaw and in position for engagement by a person's finger to move the jaw to a releasing position.

2. A car coupler comprising a housing adapted to be mounted under a car body longitudinally thereof and being open at its outer end and along its bottom, a bottom closure plate for said housing, a liner resting upon the closure plate within the housing and formed near its outer end with and upstanding boss, a shackle extending longitudinally of said housing and having a shank extending into the housing through the outer end thereof and a head at the outer end of the shank, said shank being formed with a vertical bore into which said boss fits and pivotally mounts the shackle for transverse pivotal movement, a spring extending longitudinally in said housing with its inner end seated in a socket formed in the inner end wall of the housing and its outer end seated in a socket formed in the inner end of the shank and yieldably holding the shackle against transverse tilting movement, a jaw having a shank and a bill, a pin passing verti-

cally through the shank of said jaw and the head of said shackle and pivotally mounting the jaw for movement transversely of the shackle, a spring about said pin yieldably holding the jaw in a normal position with its bill extending across the outer end of the head transversely thereof, a lip projecting laterally from the outer side of the shank of said jaw in position for engagement by a person's finger to swing the jaw to a releasing position, a member projecting downwardly from said jaw, and a cam structure adapted to be mounted upon a track and movable into and out of position for engaging the said members and automatically moving the jaw to the releasing position.

3. A car coupler comprising a housing adapted to be mounted under a car body longitudinally thereof and being open at its outer end, a shackle extending longitudinally of said housing through the open end thereof and pivotally mounted for transverse pivotal movement, spring means yieldably resisting pivotal movement of the shackle, said shackle having a head at its outer end and a jaw pivoted to the head and tiltable transversely thereof to operative and released positions, a pin projecting downwardly from said jaw, and automatic means for moving the jaw to a released position including a base adapted to be mounted upon a track between rails thereof, a strip of resilient sheet metal extending longitudinally of said base and having end portions connected with and slidable longitudinally of the support whereby a portion of the strip intermediate the length thereof may be shifted upwardly to a raised position, the said intermediate portion of said strip being formed with an upwardly projecting cam having tapered end portions forming cam surfaces along side edge thereof engageable with depending pins of connected couplings to move the jaws thereof to released positions, and means for shifting the resilient strip and its cam upwardly and holding it in an operative position.

4. A car coupler comprising a housing adapted to be mounted under a car body and being open at its outer end, a shackle extending longitudinally of said housing through the open end thereof and having a head at its outer end, a jaw pivoted to said head for movement transversely to operative and released positions, a pin projecting downwardly from said jaw, and means for automatically effecting movement of the jaw to its released position having a base adapted to be mounted longitudinally of a track between rails thereof, a flexible strip resting upon said base and having an upwardly projecting cam intermediate its length, said strip having end portions slidable longitudinally of said base whereby the intermediate portion thereof carrying the cam may be flexed upwardly and dispose the cam in position for engagement by the pin of a coupler carried by a car passing over the cam and move the jaw to a released position, a casing carried by and extending downwardly from said base under said cam and having a well at its bottom, a solenoid in said casing, having a spool over the well, a stem extending downwardly from said cam and through the spool of said solenoid, and a core for the solenoid connected with the lower end of said stem and normally seated in said well, the core being drawn upwardly when the solenoid is energized and shifting the stem upwardly to a position in which the cam is supported in its raised and operative position.

5. A car coupler comprising a housing adapted to be mounted under a car body and being open at its outer end, a shackle extending longitudinally of said body through the open end thereof and having a head at its outer end, a jaw pivoted to said head for movement transversely to operative and released positions, a pin projecting downwardly from said jaw, and means for automatically effecting movement of the jaw to its released position having a base adapted to be mounted longitudinally of a track between rails thereof, a flexible strip resting upon said base and having an upwardly projecting cam intermediate its length, said strip having end portions slidable longitudinally of said base whereby the intermediate portion thereof carrying the cam may be flexed upwardly and dispose the cam in position for engagement by the pin of a coupler carried by a car passing over the cam and move the jaw to a released position, a solenoid mounted under said base and below said cam, a stem extending downwardly from said cam and slidable through the spool of said solenoid, and a core for said solenoid disposed at the lower end of said stem and being moved upwardly when the solenoid is energized to shift the stem upwardly and support the cam in its raised and operative position.

CLARENCE K. EDWARDS.
LAWRENCE D. EDWARDS.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,885,813	Fickeissen	Nov. 1, 1932
1,953,676	Fredrickson	Apr. 3, 1934
2,102,649	Rydin	Dec. 21, 1937
2,184,103	Rydin	Dec. 19, 1939
2,288,792	Daniels	July 7, 1942
2,411,394	Strayer	Nov. 19, 1946

FOREIGN PATENTS

Number	Country	Date
605,283	Great Britain	July 20, 1948