Nov. 10, 1953 F. PETTIT 2,658,629

COMBINED TRUCK AND COUPLER FOR TOY RAILROADS

Filed Nov. 16, 1946 3 Sheets-Sheet 1

Fig. 1.

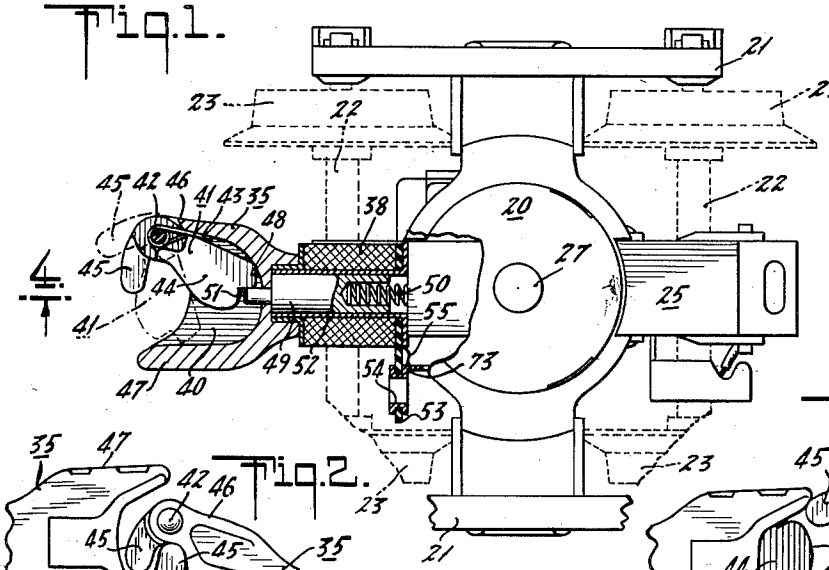


Fig. 2.

Fig. 3.

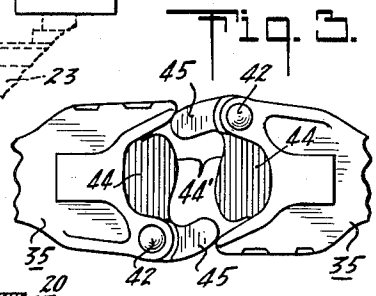


Fig. 4.

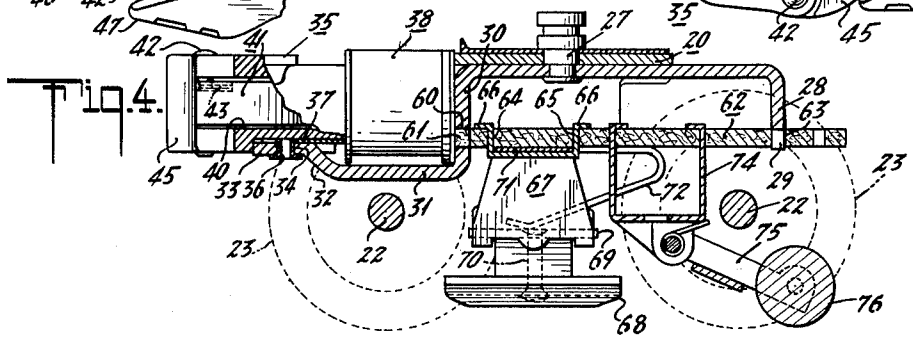
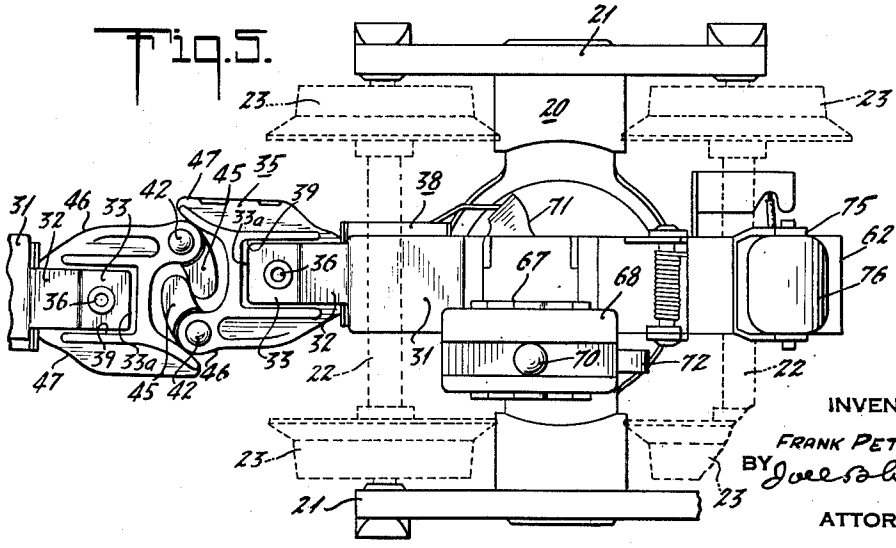


Fig. 5.



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Nov. 10, 1953 F. PETTIT 2,658,629

COMBINED TRUCK AND COUPLER FOR TOY RAILROADS

Filed Nov. 16, 1946 3 Sheets-Sheet 2

Fig. 6.

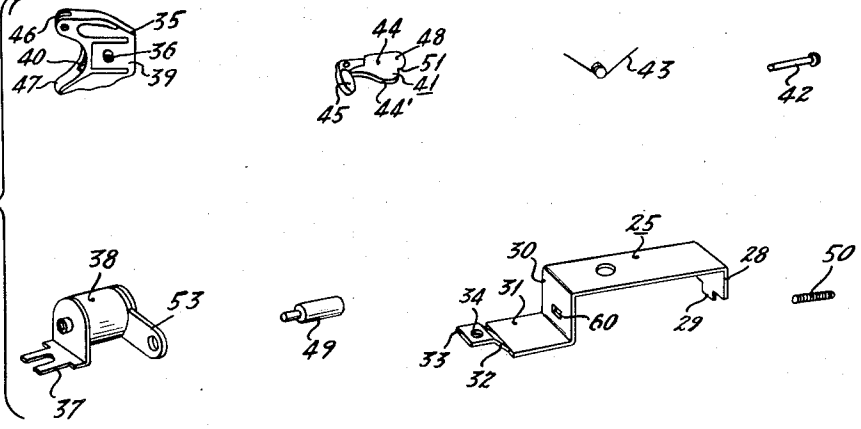
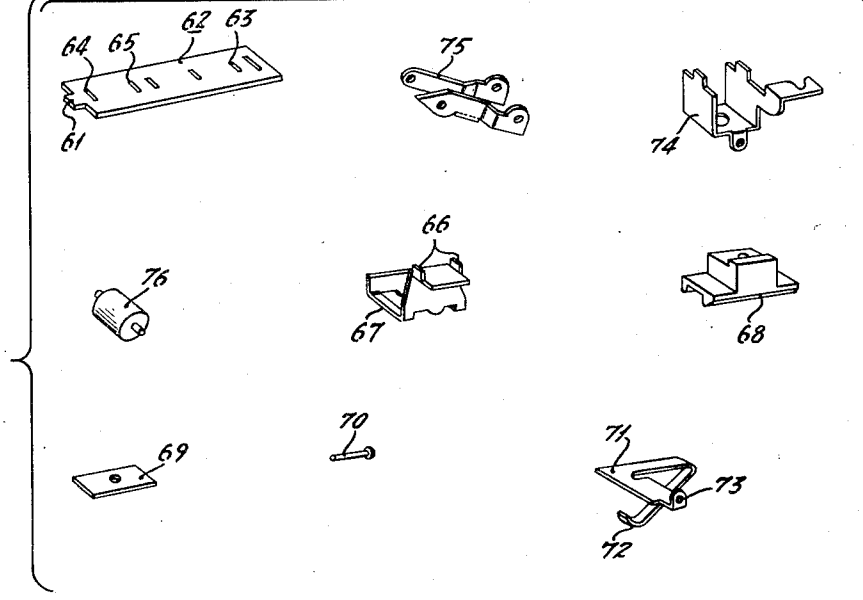


Fig. 7.



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Nov. 10, 1953 F. PETTIT 2,658,629

COMBINED TRUCK AND COUPLER FOR TOY RAILROADS

Filed Nov. 16, 1946 3 Sheets-Sheet 3

Fig. 8.

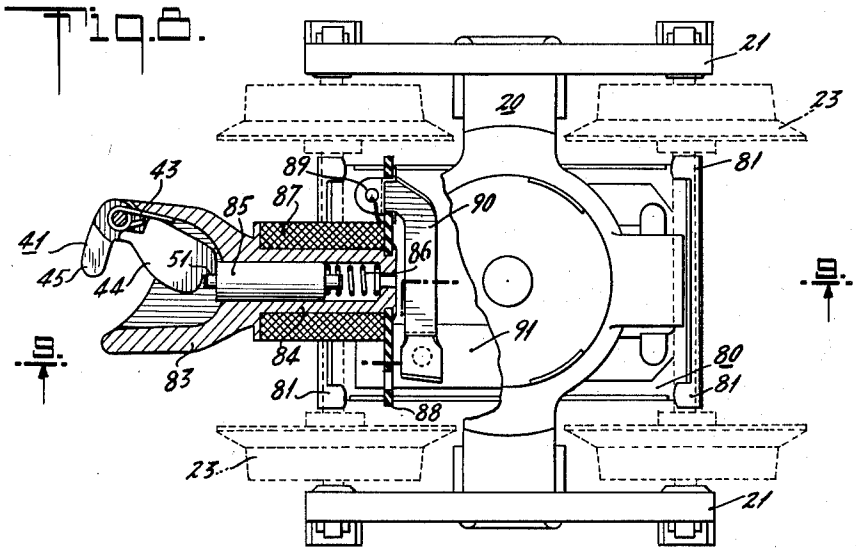


Fig. 9.

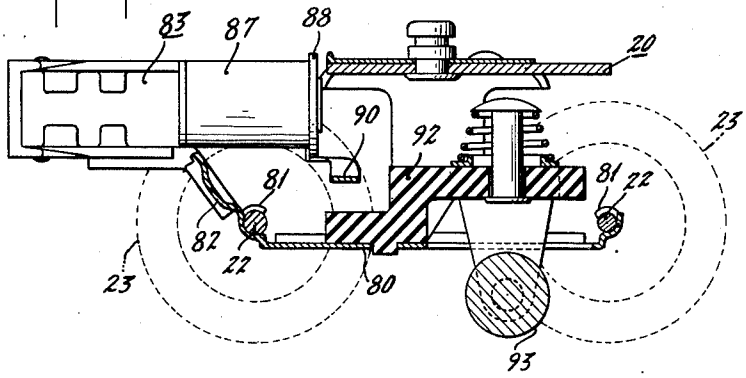
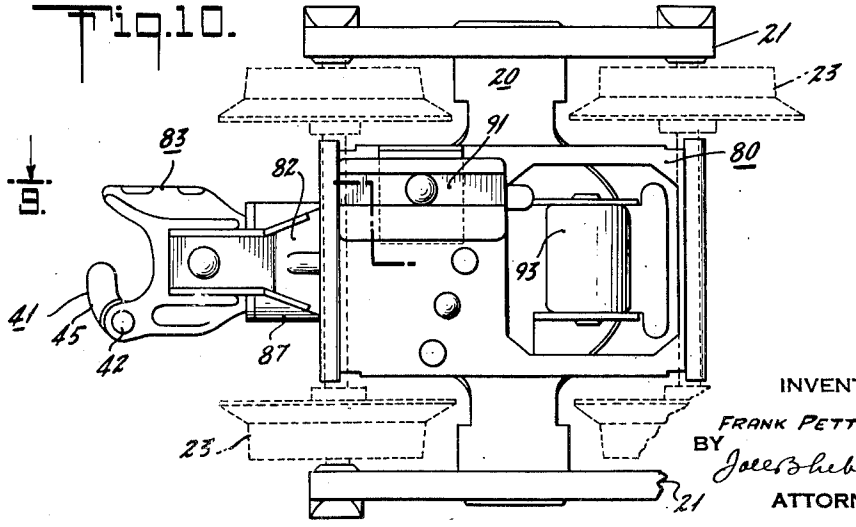


Fig. 10.



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COMBINED TRUCK AND COUPLER FOR TOY RAILROADS

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Application November 16, 1946, Serial No. 710,355

2 Claims. (Cl. 213—109)

1

The present invention relates to combined trucks and couplers for toy railroads. The present invention contemplates couplers for toy railroad cars, the couplers being made in a form which more closely simulates the appearance of standard railroad couplers than the couplers heretofore in use on toy railroad vehicles.

According to the present invention the couplers have interengageable knuckles which swing about vertical axes and are capable of automatic coupling and electromagnetic release.

According to the present invention the knuckles of the couplers have vertical interengaging surfaces of substantial extent so that irregularities in track level are taken care of by relative vertical movement of the couplers.

The present invention also contemplates improved arrangements for mounting the couplers and coupler operating mechanism on two wheeled trucks such as employed in toy electric railroads, together with the mounting of the contact devices required for operating the car lights and conducting current to the electromagnetic couplers.

A still further object of the invention is to provide couplers which neither interfere with lifting a toy car coupled in a train from the supporting track, nor with placing two cars with closed couplers in coupled relation.

Other and further objects will hereinafter appear as the description proceeds.

The accompanying drawings show for purposes of illustrating the present invention, two embodiments in which the invention may take form, it being understood that the drawings are illustrative of the invention rather than limiting the same.

In these drawings:

Figure 1 is a top plan view of a complete truck and coupler with parts of the coupler in section;

Figure 2 is a fragmentary top plan view showing two couplers in coupling engagement;

Figure 3 is a fragmentary top plan view showing two couplers about to become engaged;

Figure 4 is a vertical sectional view taken on the line 4—4 of Figure 1;

Figure 5 is an inverted plan view of the truck and coupler of Figures 1 and 4;

Figure 6 is an exploded view showing the component parts of the coupler;

2

Figure 7 is an exploded view showing the component parts of the current collectors and collector support;

Figure 8 is a view similar to Figure 1 showing a modified form of construction;

Figure 9 is a sectional view taken on the lines 9—9 of Figures 8 and 10; and

Figure 10 is an inverted plan view of the coupler shown in Figures 8 and 9.

The truck illustrated herein employs a sheet metal bridging or body member 20, side plates 21—21, axles 22—22 and wheels 23. This truck is shown and described more in detail in Bonanno Patent 2,526,452 of October 17, 1950.

In the construction shown in Figures 1 through 7 inclusive, the coupler parts and electrical parts are secured to the truck body by a bent metal strap 25 which has a flat upper portion 26 secured to the body member 20 by the central rivet 27 also used to secure the truck to the car body. As shown in the drawings, the right hand end of the strap 25 is bent downwardly as indicated at 28 and has a reduced end 29. An intermediate portion of the strap extends downwardly as indicated at 30, then leftwardly as indicated at 31, then upwardly as indicated at 32 and horizontally as indicated at 33, where it is narrowed and also provided with an aperture 34.

A coupler head 35, preferably in the form of a die casting has a tubular rivet-like portion 36 adapted to extend down through a grounding terminal plate 37 of a solenoid coil 38 and through the hole 34 of the strap 25 and be upset to secure these parts together as indicated in Figure 4. In this manner the coupler head and solenoid coil are fixedly secured to the truck. To prevent twisting of the coupler head on its support, the bottom of the coupler head has a downwardly opening recess 39 which fits about the end 33 of the strap 25.

The coupler head 35 has a recess 40 adapted to accommodate a knuckle 41 carried on a pin 42 and biased in a clockwise direction as viewed in Figure 1, by a spring 43. The knuckle has a latching arm 44 which extends into the recess 40 and a coupling arm 45. The arm 45 extends from the side 46 of the coupler head carrying pivot pin 42 to the other side 47.

The knuckle 41 when in the unlatched or uncoupled position, is in the position shown in

Figure 3 and in the dot and dash line position of Figure 1. When the knuckle is turned to tension the spring 43 the extreme inner end 48 of the knuckle presses against the end of a magnetic pin 49 urged leftwardly in Figure 1 by a spring 50, and compresses this spring. When the knuckle has reached substantially the limit of its movement the spring 50 protracts the pin 49 past the shoulder 51 of the knuckle and locks the knuckle in the full line position shown in Figure 1 and in the position shown in Figures 2, 4 and 5.

In this form of construction the tube 52 carrying a solenoid coil 38 is open to the right so that the spring 50 can press against the downwardly extending portion 30 of the strap 25. The solenoid also carries an insulating strap 53 provided with a connector 54, to which the wire 55 from the coil is secured.

The vertical part 30 of the strap 25 is provided with an opening 60 to receive the reduced end 61 of an insulation strip 62. Near the other end of this strip is an opening 63 to receive the reduced end 29 of the metal strap 25. The insulation strip 62 is provided with slots 64, 65 to receive prongs 66—66 of the collector shoe bracket 67. This bracket carries a grooved, insulating collector shoe body 68, a metal collector shoe plate 69 and rivet 70 in such a manner that the assemblage can move up and down as it travels along the rail. Between the bracket 67 and the insulating strip 62 is mounted a contactor 71 which has a spring element 72 in engagement with the shoe plate 69 and a soldering lug 73 which is secured to the terminal 54 of the coil 38. In this manner current can be transmitted to the coil 38 at any time when the circuit is closed to the auxiliary rail on which the collector shoe rides. The strip 62 may also carry a collector bracket 74 which carries a pivoted collector arm 75 provided with roller 76 as indicated. This roller and associated parts will normally be used on cars having electric lights or continuously operated accessories.

The coupler parts are generally in the position indicated in full lines in Figure 1 and in the position shown in Figures 1, 4 and 5. When two cars are coupled together the knuckles interlock as indicated in Figure 5 so that one car can pull or push the other. The coupling arms 45—45 of the two couplers overlap as indicated and the couplers cannot be separated in any ordinary operation of the cars. One coupler can move up and down relative to the other and yet maintain coupling contact owing to the wide vertical surfaces of the interengaged couplers. The couplers cannot separate laterally because there is insufficient space between the coupling end of the knuckle on one coupler and the opposite side of that coupler for the mating coupler to be disengaged. Furthermore, the couplers cannot be disengaged by swinging the cars relative to one another because the outside of the coupler adjacent the pivot of the knuckle, will engage the inside of the other coupler head when the parts are shifted to the extreme position as indicated in Figure 2.

When it is desired to uncouple the cars it is merely necessary to energize one of the couplers which will release the knuckle and cause it to swing to the dotted line position of Figure 1 or to the position shown in Figure 3. When the cars are to be coupled together the couplers approach one another as indicated in Figure 3 and the outer end of the coupler arm 45 engages the surface 44' of the knuckle of the other car so as to force this knuckle back into the recess against the tension of the spring 43 to such an extent as to permit the plunger 49 to latch the knuckle in coupling position.

Cars having these couplers may be very readily assembled on the track by merely lowering the car down into position adjacent another car on the track with the parts so aligned that the knuckle of one coupler passes through the space provided in the coupler of the other car. A car may be lifted out of a train without any interference whatever by the coupler. Should one desire to open the coupler on the car so that the cars can be joined together automatically it is merely necessary to apply a sudden force to the car in a direction to move the plunger 49 against the tension of the spring 50, thereby releasing the knuckle.

In the form of construction shown in Figures 8, 9 and 10 the truck frame, side plates, wheels and axles may be the same as above referred to. Here all the coupler parts and current collecting parts are secured to a mounting plate 80 and this plate is fastenend on to the axles by bent over prongs as indicated at 81. The plate 80 has, as shown in the drawings, a leftwardly extending bracket arm 82 shaped and positioned substantially the same as the extreme end 33 of the strap 25. This bracket arm 82 carries the entire coupler mechanism.

In this form the coupler mechanism includes a coupler head 83 generally similar to the one above described and carrying the same form of knuckle 41 and knuckle spring 42. The coupler head 83, however, has an integral tubular extension 84 adapted to receive the plunger 85 and plunger spring 86 as well as a solenoid coil 87 and terminal plate 88. Here the terminal plate is adapted to receive one end 89 of a spring contact 90 which extends down on to and cooperates with a collector shoe assembly 91 similar to that above described so that current can be supplied to the solenoid coil 87 whenever desired. The plate 80 may also carry an insulating support 92 on which is mounted a current collecting roller 93, for use where it is desired to supply a current to a lamp on the car.

Since it is obvious that the invention may be embodied in other forms and constructions within the scope of the claims, I wish it to be understood that the particular forms shown are but a few of these forms, and various modifications and changes being possible, I do not otherwise limit myself in any way with respect thereto.

What is claimed is:

1. A coupler for toy railroads comprising a coupler head having a bifurcated end, a knuckle receiving recess opening toward said end, an axially-disposed plunger having an end entering the bottom of the recess, a relatively soft spring protracting the plunger, a knuckle pivoted to one of the bifurcations of the coupler head and having a latch arm extending lengthwise of the recess and engageable with the plunger end to hold it against movement and a coupling arm extending toward the other bifurcation so as to couple with the similarly placed corresponding arm of another coupler, and a knuckle spring acting on withdrawal of the plunger to swing the knuckle and move the latch arm past the end of the plunger and the coupling arm out of coupling position, the first spring being readily yieldable and the plunger having sufficient mass to shift against the first spring when its movement

is suddenly stopped whereby the plunger may be thereby withdrawn from engagement with the knuckle.

2. A toy car coupler having a knuckle spring biased to open position, a reciprocably mounted magnetizable plunger, a relatively soft spring urging the plunger into position to engage the knuckle and hold it closed, and a magnet coil for shifting the plunger to releasing position, the mass of the plunger being relatively great whereby its inertia may be utilized to compress the soft spring and release the knuckle upon a sudden jolt.

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