My invention relates to railroad car uncoupling means and more particularly to an improved means for uncoupling toy and model railroad cars provided with couplers which are each formed to automatically couple to a like coupler when moved thereagainst and which are each formed with a depending uncoupling pin so formed and located that when the pin of one coupler is swung toward the pin of the other coupler a coupled pair the couplers are uncoupled.

In view of the considerable effort that is being made to make the equipment and operation of toy railroad systems simulate the construction and operation of standard railroad systems, prior toy and model railroad uncoupling devices which require more or less motion of coupled cars over an uncoupling device in order to accomplish an uncoupling operation are not in accordance with recommended standard railroad practices and are considered objectional by toy and model railroad operators.

Another objection to prior uncoupling devices is that when certain parts of the couplers used therewith, particularly the uncoupling pins, become slightly deformed from use or abuse, they fail to properly uncouple coupled couplers, with the result that derailments occur and may cause further damage to the uncoupling pins and other parts of the equipment.

An object of the present invention is to provide an improved uncoupling device which will overcome the objections to prior uncoupling devices.

Another object is to provide an improved uncoupling device which will properly uncouple coupled couplers notwithstanding considerable deformation of either or both couplers.

Another object is to provide an uncoupling device which does not require any change in the normal elevation of the cross-ties, rails or roadbed.

Another object is to provide an uncoupling device which is simple, inexpensive to manufacture and highly effective in uncoupling coupled cars and which cannot interfere with normal operation of toy or model railroad systems.

Another object is to provide an uncoupling device which if inadvertently left in an uncoupling position, will uncouple cars passing thereover and thereby apprise the operator of the error and which despite the error will not cause derailment of the cars.

These and other objects will appear from the perusal of the following detailed description of presently preferred forms of the invention and the drawings wherein like reference characters denote like parts and wherein:

FIGURE 1 is a fragmentary top plan view of a pair of coupled toy or model railroad cars mounted upon a section of track provided with my improved form of car uncoupling device.

FIGURE 2 is a side elevational view of FIGURE 1.

FIGURE 3 is a transverse vertical sectional view taken on the line 3--3 of FIGURE 1, showing a pair of uncoupling plates in their inoperative normal position in full lines and showing said plates in their car uncoupling plate position in dot and dash lines.

FIGURE 4 is a fragmentary perspective view showing an uncoupling plate actuating means holding the uncoupling plates in their coupler uncoupling position.

FIGURE 5 is a fragmentary bottom plan view showing the location of the uncoupling pins when a pair of the couplers are coupled.

FIGURE 6 is a fragmentary bottom plan view showing the location of the uncoupling pins when a pair of the couplers are uncoupled.

FIGURE 7 is a fragmentary elevational view showing a modified form of uncoupling plates and a modified form of uncoupling plate actuating means.

Referring now to the drawings the fragmentary end portions of a pair of toy or model railroad cars C are each provided with an automatic coupling device D each of which carries a depending uncoupling pin P. The uncoupling pins P are each formed and arranged on the associated coupler so that when a pair of the couplers are coupled together, as best shown in FIGURE 5 the pins are spaced a predetermined distance apart and when the pins are moved one toward the other, as best seen in FIGURE 6, the couplers are uncoupled. It should be understood that hereinafter any use of the term "toy," in connection with the cars, the track or the present invention includes the term "model" which is used to designate accurately scaled toy railroad equipment.

Referring to FIGURES 1 to 3 of the drawings, wherein the coupling device of the present invention is designated by the numeral 10, it will be seen that the base of each of a pair of suitably spaced rails 11 are mounted upon spaced groups of spaced cross-ties 12 and upon a rectangularly shaped base plate 13, located between the spaced groups of cross-ties. The length of the base plate 13 is longer than that of the cross-ties 12 so that when one of its ends is aligned with one end of the cross-ties its opposite end lies beyond the other end of the cross-ties and provides a readily accessible extended portion which is provided with means for actuating certain uncoupling plates all to be hereinafter described.

As shown in FIGURES 1 to 4, a pair of hinges plates 14 and 15 are each respectively formed with complementing hinges pins receiving portions 14' and 15' which are hingedly connected together by a hinge pin 16. The ends of the hinge pin 16 are extended beyond the portions 14' and 15' and may be secured to the base plate 13 or to the cross-ties 11 adjacent thereto in any suitable manner, however it is presently preferred to bend the ends of the pin 16 to provide the short angularly disposed legs 17 which may be frictionly secured in holes formed in either the base plate or the cross-ties. In any event the plates 14 and 15 are hingedly mounted midway between and in spaced parallel relation to the rails 11 by the pin 16 so that in their normal inactive positions they each lie substantially flat upon the base plate 13 and may each be swung to the substantially upright uncoupling pin engaging and coupler uncoupling positions shown in FIGURE 4, and also indicated by dot and dash lines in FIGURE 3. Still referring to FIGURE 4 the body of a helically wound coil spring 18 embraces the hinge pin 16 and its opposite ends bear upon and act to resiliently hold the plates 14 and 15 in their inactive positions. The spring 18 allows the plates to be swung to their coupler uncoupling position and thereafter restores the plates to their normal inactive position. As best seen in FIGURES 1 and 4 the plate 13, preferably midway between its sides and midway between the plates 14 and 15 is formed with an opening 19 to receive a swingably mounted part of a means for actuating the plates 14 and 15.

An uncoupling plate actuating means generally designated by the numeral 20 comprises a section of rod 21 rotatably secured in a bore 21' formed in the base plate 13, normal to the plane of the rails 11. The rod 21 extends across the opening 19 and has one of its ends
3 bent at a right angle, thereby to provide a radially disposed lever arm or fingerpiece 22 which extends upward through a suitably shaped slot 23 formed in the extended part of the base a suitable distance from the rails, whereby the fingerpiece may be grasped and swung to rotate the rod.

A rigid plate 26 has one of its ends secured to that portion of the rod 16 which is located within the opening of the plate and extends substantially radially thereto and beneath the plates 14 and 15. The other end of the plate 26 is formed with a somewhat V-shaped notch 27 to provide a pair of spaced arms 24 and 25, the outer ends of which are equally spaced from the axis of the rod 21 and from the axis of the hinge pin 16. The arms 24 and 25 being thus formed and located, swing in a counterclockwise direction, as viewed in FIGURE 2, when the fingerpiece 22 is swung in the same direction, and during their swinging movement the arms 24 and 25 operate the lower side of the uncoupling plates 14 and 15 respectively and by a cam like action thereagainst swing them about the pivot pin 16 to their substantially upright uncoupling positions. The extent of the counter clockwise swinging movement of the fingerpiece 22 is limited by one end of the slot 23 and at this time the arms 24 and 25 of the plate 26 are substantially upright and transversely straddle the plates 14 and 15 and prevent their return to their normal position until the plate 26 is swung to its normal position. It is intended that uncoupling plates 14 and 15 should be moved to their uncoupling position by swinging the plate 26 in the above described manner and direction and immediately thereafter the plate 26 should be swung in the opposite direction to release the uncoupling plates 14 and 15 and to allow the spring 18 to restore them to their normal position. However, in the event the uncoupling plates 14 and 15 are inadvertently left and held in their coupler uncoupling position by the means 20 they may cause derailment of cars passing their path, and for this reason the opposite ends of the plates 14 and 15 are bent outwardly as at 28 thereby to engage and direct the uncoupling pins of coupled couplers therebetween, whereby coupled cars passing over the erroneously positioned device are not derailed but are uncoupled thereby operating the operator of the error.

The above described device being directly operable by the fingerpiece 22 is best suited to simple toy railroad systems, however since many of the sandry accessories of more elaborate systems are operated from more or less remote stations, the extension of the plate 13 carries a conventional electro-magnetic means 30 having a pole part 31 which is slotted at 32 to receive the fingerpiece 22 so that when the circuit, diagrammatically indicated in FIGURE 1, is closed the part 31 is moved to the left and swings the fingerpiece to thereby actuate the device in the manner described. The means 30 includes a compression spring 33 which is compressed when said means is operated by closing the circuit and when which the circuit is opened acts to restore the associated parts to their normal positions.

In the modified form of the device shown in FIGURE 7 a pair of hinge plates 34 and 35, each provided at each of its ends with the hinge pins 34' and 35' respectively, are pivotally connected in spaced parallel relation to each other and midway between and parallel to the rails (not shown) by a pair of the clips 36 which are formed to loosely embrace the hinge pins 34' and 35' and which are secured in place by a screw 37 whereby the spaced hinge plates 34 and 35 are each normally positioned to lie substantially flat upon the base plate 13 and may each be swung to a substantially upright position, during which movement of the plates 34 and 35 they each engage and move the uncoupling pins of a pair of coupled couplers, thereby to uncouple said couplers. In this form, an actuating plate formed similar to plate 26, may be secured to a rod like the rod 21 to actuate the hinged plates 34 and 35. It is preferred however that a rod 21' be bent as shown in FIGURE 7 to provide the rigid arms 24' and 25'. It should be understood that the herein shown and described forms of improved uncoupling devices are intended to exemplify the principles of my invention and that various modifications and rearrangements of the component parts of these devices may be made within the scope of the appended claims, wherein:

1. An improved device for uncoupling toy and model railroad cars having automatic couplers provided with a depending uncoupling pin, comprising a base plate for supporting a parallel pair of rail sections spaced to suit the spacing of the car wheels, a pair of parallel uncoupling plates located midway between and paralleling the rails below their top surface and each pivotally mounted for swinging movement from a normal position substantially flat upon the top surface of the base plate to a substantially upright position, during which swinging movement said uncoupling plates engage and move the lower end of the uncoupling pin of each of a pair of coupled couplers located thereabove inwardly and thereby uncouple said couplers, and an uncoupling plate actuating means, said means including a rod pivotally carried by the base plate in transverse relation to and beneath the uncoupling plates and a pair of spaced radially disposed rigid arms rigidly carried by the rod and normally located beneath the uncoupling plates for swinging movement from their normal position through an opening in the base plate to a substantially upright position during which movement the rigid arms exert a camming action against the uncoupling plates and thereby move them to their upright coupler uncoupling position.

2. An improved device for uncoupling toy railroad cars, as set forth in claim 1, wherein the inner side edges of the uncoupling plates are hingedly connected together by a hinge pin and the opposite ends of the hinge pin are formed to be pivotable about and held in place by said plate 26 and for swinging movement about said pin and a spring means is formed, located and engaged with each of the uncoupling plates, thereby to resiliently maintain said plates in and to return them to their normal position after the uncoupling plate actuating means has been restored to its first position.

3. An improved device for uncoupling toy railroad cars as set forth in claim 1 wherein the outer end of the pivotally mounted rod is provided with a radially disposed manually operable lever arm extended through a slot formed in the plate 26 for partially rotating it and is provided adjacent its inner end with the pair of rigid arms, said rigid arms being spaced and formed to engage and cam said plates from their normal position to their upright position when the rod is partially rotated by the lever.

4. An improved device for uncoupling toy railroad cars as set forth in claim 3 wherein an electro-magnetic means operable from a remote point by suitable circuit means is carried by and located on the base plate, said means including a movable part operably connected to the manually operable lever, said part including a slot arraigned to allow the uncoupling device to be directly operated by the lever independently of said means or to be operated by said means from a remote point.

5. An improved device for uncoupling the automatic couplers of toy railroad cars as set forth in claim 1 wherein the outer end of the uncoupling plates are bent at a right angle, thereby to provide a radially disposed lever arm or fingerpiece which extends upward through a suitably shaped slot formed in the extended part of the base a suitable distance from the rails, whereby the fingerpiece may be grasped and swung to rotate the rod.

6. An improved device for uncoupling the automatic couplers of toy railroad cars as set forth in claim 1 wherein the inner side edge of the uncoupling plates are
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5 spaced one from the other and have each of their opposite ends provided with a pivot pin aligned with said edge, and clip means secured to the base plate each formed and arranged thereon to embrace and pivotally secure an adjacent pair of the pivot pins, thereby to position and allow the swinging movement of said plates.

7. An improved device for uncoupling the automatic couplers of toy railroad cars as set forth in claim 1 wherein the pair of spaced radially disposed rigid arms are integrally formed on the rod.

8. An improved device for uncoupling the automatic couplers of toy railroad cars as set forth in claim 6 wherein the rod is integrally formed with a spaced pair of radially disposed U-shaped loops to provide the rigid arms.

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