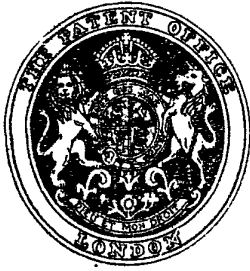


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PATENT SPECIFICATION



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740,574

Date of filing Complete Specification: June 21, 1954.

Application Date: June 23, 1953. *No.* 17380/53.

Complete Specification Published: Nov. 16, 1955.

Index at acceptance:—Class 132(3), S19A4E1.

COMPLETE SPECIFICATION

Improvements in or relating to Model Railways

We, MECCANO LIMITED, a British Company, of Binns Road, Liverpool 13, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention relates to model railways and more particularly to an uncoupling device for actuating the model railway couplings described in the specification of British Patent No. 605,283, which comprises a swivel arm carrying a hook arranged sideways and also a downwardly depending uncoupling striker member which is adapted to be moved laterally by an uncoupling ramp arranged on the track when the vehicles are to be uncoupled.

The invention has for its object to provide an improved construction of uncoupling device for the couplings above referred to which may be electrically actuated from a remote point. To this end, the invention consists in a model railway track or track section having an uncoupling ramp disposed longitudinally between the running rails of the track for engaging, when the ramp is raised to an operative position, with strikers depending from the couplings of model railway vehicles for uncoupling the vehicles, wherein the ramp is raised to its operative position by two operating members acting respectively at spaced points along the ramp, said two operating members being respectively operated by two armatures arranged respectively at opposite ends of a common actuating electromagnet or solenoid. When the electromagnet or solenoid is energized, both armatures are simultaneously actuated to move their respective operating members and raise the uncoupling ramp to its operative position. Preferably the ramp and other components are restored to their inoperative position when the electromagnet or solenoid is de-energised by the weight of the ramp and other components although, if desired, light springs may be provided to assist

in restoring the ramp to its inoperative position.

In order that the invention may be more clearly understood, reference will now be made to the accompanying drawing, in which:—

Fig. 1 is a plan view of a track section incorporating an uncoupling ramp in accordance with this invention, with the cover which normally encloses the electromagnet removed.

Fig. 2 is a section along the line A—A of Fig. 1.

Fig. 3 is a perspective view with the cover for the electromagnet removed and part of the track bed and ramp cut away to show the operating mechanism therebeneath.

Referring to the drawing, the track or track section is similar to that illustrated in Figs. 2 and 3 of the aforementioned specification and comprises an open-bottomed hollow track bed 1 which may, for example, be made of pressed tinplate and may be suitably printed or embossed with representations of track sleepers and ballast. The ramp is preferably made as a plastic moulding and comprises a pair of members 2a, 2b arranged above the top of the track bed between the running rails 3 and arranged on each side of the centre rail 3a (if provided), the outer side edges of the ramp members being shaped with inwardly curved or inclined ends to engage the uncoupling strikers on the vehicle couplings when the ramp is raised to its operative position. The two ramp members 2a, 2b may be moulded integrally, being joined together by transverse parts 5, 6 of the moulding which extend through apertures 7 in the track bed 1 and lie below the centre rail. Two of these transverse members 5 are arranged respectively adjacent opposite ends of the ramp.

Adjacent one side of the track bed and parallel thereto is arranged an electromagnet 8 having rockable or pivoted armatures 9a at opposite ends thereof. These armatures are respectively connected to turn arms 10 which extend transversely beneath the track bed. These arms constitute the operating members

[Price 3s. 0d.]

and are provided with projecting portions 11 which are raised when the arms 10 are rocked by the action of the armatures 9a. The said projecting portions 11 are arranged respectively below the transverse portions 5 of the ramp so that when the armatures 9a are attracted, the raising of the projecting portions 11 causes them to bear upon and raise the ramp 2a, 2b to its operative position. When the electromagnet 8 is de-energised, the weight of the ramp urges the projecting portions 11 downwards and thereby restores the armatures 9a to their non-attracted positions. Preferably the armatures and arms are so balanced that they also tend to return to their unattracted positions by gravity when the electromagnet 8 is de-energised.

The electromagnet and armature mechanism is preferably carried on a common member 12, which is most conveniently made of a moulding of, preferably thermo-setting, plastic material, thus affording both electrical and magnetic insulation. This plastic moulding may be so constituted as to receive a tunnel-shaped cover 13 which may be of tinfoil, and so arranged as to enclose the electromagnet and armature mechanism.

The complete moulding with cover may also be mounted on a sub-base 14, made of tinfoil and provided with a tray-like portion 14a which is arranged below and secured to the track base, the sub-base 14 being so arranged relative to the track base that the transverse members 5 of the ramp are positioned above the projecting portions 11 of the arms 10 which are arranged in the tray-like portion 14a as later described.

Slots are provided in the moulding at each end of the electromagnet winding, which receive the extremities of a piece of flat soft iron 15, or similar material having suitable magnetic properties and of suitable cross-sectional area, which is thus retained in position parallel to the core of the electromagnet with its extremities in close proximity to the base or fulcrum points of the two armatures. This appreciably reduces the reluctance of the magnetic circuit and thus increases the magnetic flux, resulting in an increase in the forces acting on the two armatures when the mechanism is energised from an alternating current supply source.

Each armature 9a may be constructed as part of an L-shaped stamping with a horizontal limb 9b, the angle between the limbs 9a, 9b being slightly less than a right angle so that when the horizontal limb 9b of the stamping is resting on the plastic moulding 12 at an end of the magnet, the vertical armature limb 9a will be inclined away from the magnet core. The stamping may be located in position by a stud 16 passing through an aperture 17 in the horizontal limb 9b of the stamping which is so arranged as to permit the armature to rock about the corner between the horizontal

and vertical limbs. The studs 16 may comprise extensions of rivets for holding the moulding 12 to the sub-base 14.

The armature stamping above referred to may be made from thin gauge metal a thicker member 18 of magnetic material may be secured, for example by turnover clips, to the vertical armature limb 9a.

Each stamping 9a, 9b is preferably formed integral with an arm 10. The arms 10 extend across the tray-like part 14a of the sub-base and have their opposite ends located in notches 20 in an upstanding flange 21 at the edge of the part 14a of the sub-base, the arms 10 rocking within these notches 20 when the armatures 9a are actuated. Each arm 10 is stamped with side flanges; from the edge of one of the flanges extends the outwardly projecting portion 11 which normally lies close against the bottom of the tray-like part 14a of the sub-base and directly beneath a transverse part 5 of the ramp.

Whilst a particular embodiment of the invention has been described, it will be understood that various modifications may be made without departing from the scope of the invention. For example, in a modification, the soft iron member extending along the length of the magnet winding is replaced by a permanent anisotropic type of magnet, preferably one having high coercivity and (B.H.) maximum values, which causes both armatures to become magnetically polarised. The complete mechanism then becomes electrically selective, depending for its operation on the application of a direct current supply of correct polarity. Reversal of this polarity would cause the mechanism to remain inoperative.

What we claim is:—

1. A model railway track or track section having an uncoupling ramp disposed longitudinally between the running rails of the track for engaging, when the ramp is raised to an operative position, with strikers depending from the couplings of model railway vehicles for uncoupling the vehicles, wherein the ramp is raised to its operative position by two operating members acting respectively at spaced points along the ramp, said two operating members being respectively operated by two armatures arranged respectively at opposite ends of a common actuating electromagnet or solenoid.

2. Apparatus as claimed in claim 1, wherein the armatures respectively actuate two rockable arms extending transversely beneath the track bed and are provided with projecting portions which engage with and raise the ramp when the arms are rocked by the actuation of the armatures.

3. Apparatus as claimed in claim 2, wherein the armatures are actuated by an electromagnet which is arranged at one side of and parallel to the track, the armatures being formed by portions of the arms bent upwardly

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at the ends thereof.

4. Apparatus as claimed in claim 3, wherein the armatures and arms are so balanced that the armatures tend to fall away from the electromagnet.

5. Apparatus as claimed in claim 3 or 4, wherein a member of magnetic material is arranged outside and substantially parallel to the core of the electromagnet, the extremities of said magnetic member being in close proximity to the fulcrum points of the two armatures.

6. Apparatus as claimed in claim 3, 4, or 5, wherein the electromagnet and rockable arms are carried by a sub-base adapted to be secured below the track bed.

7. A model railway track or track section equipped with an uncoupling ramp, constructed and adapted to operate substantially as described with reference to the accompanying drawings.

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PROVISIONAL SPECIFICATION

Improvements in or relating to Model Railways

We, MECCANO LIMITED, a British Company, of Binns Road, Liverpool 13, do hereby declare this invention to be described in the following statement:—

The present invention relates to model railways and more particularly to an uncoupling device for actuating model railway couplings of the kind described in the specification of British patent No. 605,283, which comprise a swivel arm carrying a hook arranged sideways and also a downwardly depending uncoupling striker member which is adapted to be moved laterally by an uncoupling ramp arranged on the track when the vehicles are to be uncoupled.

The invention has for its object to provide an improved construction of uncoupling device of the kind above referred to which may be electrically actuated from a remote point. To this end, the invention consists in a model railway track or track section having an uncoupling ramp disposed longitudinally between the running rails of the track and formed with laterally inclined sides or ends for engaging and urging sideways strikers depending from the couplings of model railway vehicles for uncoupling the vehicles as the strikers are moved along the ramp, said ramp being raised to its operative position by two operating members acting respectively at spaced points along the ramp, said two operating members being respectively connected for operation by two armatures arranged respectively at opposite ends of a common actuating magnet or solenoid. When the magnet or solenoid is energised, both armatures are simultaneously actuated to move their respective operating members and raise the uncoupling ramp to its operative position. Preferably the ramp and other components are restored to their inoperative position when the magnet is deenergised by the weight of the ramp and other components although, if desired, light springs may be provided to assist in restoring the ramp to its inoperative position.

In one embodiment according to the inven-

tion, the track or track section is similar to that illustrated in Figures 2 and 3 of the aforementioned specification and comprises an open-bottomed hollow track bed which may, for example, be made of pressed tin plate and may be suitably printed or embossed with representations of track sleepers and ballast. The ramp is preferably made as a plastic moulding and comprises a pair of members arranged above the top of the track bed along each side of and spaced from the centre rail (if provided), the outer side edges of the ramp members being shaped with inwardly curved or inclined ends to engage the uncoupling strikers on the vehicle couplings when the ramp is raised to its operative position. The two ramp members may be moulded integrally, being joined together by transverse parts of the moulding which extend through apertures in the track bed and lie below the centre rail. Two of these transverse members are preferably arranged respectively adjacent opposite ends of the ramp.

Adjacent one side of the track bed and parallel thereto is arranged an electromagnet having rockable or pivoted armatures at opposite ends thereof. These armatures are respectively connected to turn arms which extend transversely beneath the track bed. These arms constitute the operating members and are provided with projecting portions which are raised when the arms are rocked by the action of the armatures. The said projecting portions are arranged respectively below the transverse portions of the ramp which project through the track base so that when the armatures are attracted, the raising of the projecting portions causes them to bear upon and raise the ramp to its operative position. When the magnet is deenergised, the weight of the ramp urges the projecting portions downwards and thereby restores the armatures to their non-attracted positions. Preferably the armatures and arms are so balanced that they also tend to return to their unattracted positions by gravity when the magnet is deenergised.

5 The electro-magnet and armature mechanism is preferably carried on a common member, which is most conveniently made of a moulding of, preferably thermo-setting, plastic material, thus affording both electrical and magnetic insulation. This plastic moulding may be so constituted as to receive a cover which may be of tinplate, and so arranged as to enclose the magnet and armature mechanism.

10 The complete moulding with cover may also be mounted on a sub-base preferably of tinplate, which in turn is secured to the track base, and so arranged relative to the latter that the transverse members of the ramp are positioned above the projecting portions of the arms.

15 A special feature of the arrangement described is provided by including in the moulding at each end of the electro-magnet winding, slots which receive the extremities of a piece of flat soft iron, or similar material having suitable magnetic properties and of suitable cross-sectional area, which is thus retained in position parallel to the core of the electro-magnet with its extremities in close proximity to the base or fulcrum points of the two armatures. This appreciably reduces the reluctance of the magnetic circuit and thus increases the magnetic flux, resulting in an increase in the forces acting on the two armatures when the mechanism is energised from an alternating current supply source.

20 Each armature may be constructed as an L-shaped stamping with the angle between the limbs slightly less than a right angle so that when the horizontal limb of the stamping is resting on the plastic moulding at an end of the magnet, the vertical limb of the armature will be inclined away from the magnet core. The stamping may be located in position by a stud passing through an aperture in the horizontal limb of the stamping which is so arranged as to permit the armature to rock

45 about the corner between the horizontal and vertical limbs. The stud may comprise a headed screw, the head of which is spaced sufficiently far away from the moulding to allow the armature to rock. The head of the screw may constitute a stop to prevent the vertical limb of the armature from actually rocking sufficiently to touch the magnet core.

50 The armature stamping above referred to may be made from thin gauge metal, a thicker member of magnetic material may be secured, for example by turnover clips, to the vertical limb of the armature.

55 The horizontal limb of each armature is connected to an arm which extends across the sub-base beneath the track bed and may have its opposite end located in a notch in an up-standing flange at the edge of the sub-base, the arm rocking within this notch when the armature is actuated. Each arm may be a stamping of sheet metal and is formed with an outwardly projecting portion which normally lies close against the sub-base and directly beneath a transverse part of the ramp.

60 Whilst a particular embodiment of the invention has been described, it will be understood that various modifications may be made without departing from the scope of the invention. For example, in a modification, the soft iron member extending along the length of the magnet winding is replaced by a permanent anisotropic type of magnet, preferably one having high coercivity and (B.H.) maximum values, which causes both armatures to become magnetically polarised. The complete mechanism then becomes electrically selective, depending for its operation on the application of a direct current supply of correct polarity. Reversal of this polarity would cause the mechanism to remain inoperative.

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740,574 COMPLETE SPECIFICATION

1 SHEET This drawing is a reproduction of the Original on a reduced scale.

