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B. OREL

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COUPLING DEVICE FOR TOY TRAIN SETS

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Fig. 1.

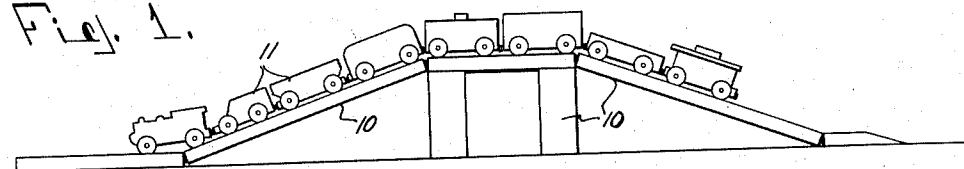


Fig. 2.

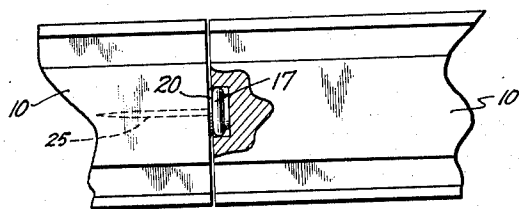


Fig. 3.

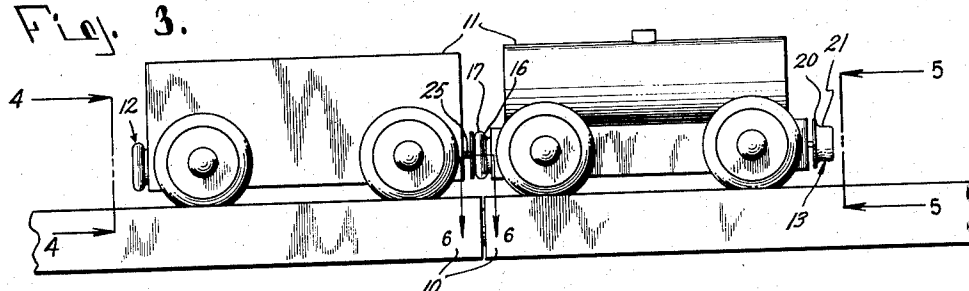


Fig. 4.

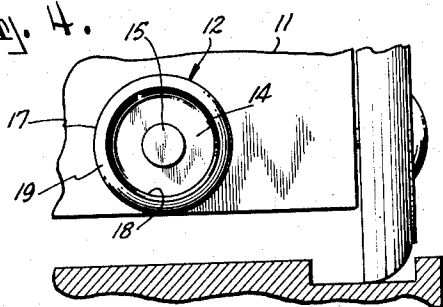


Fig. 5.

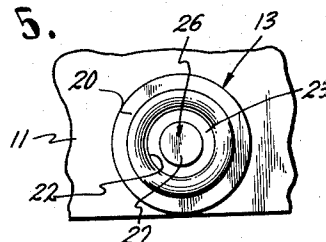
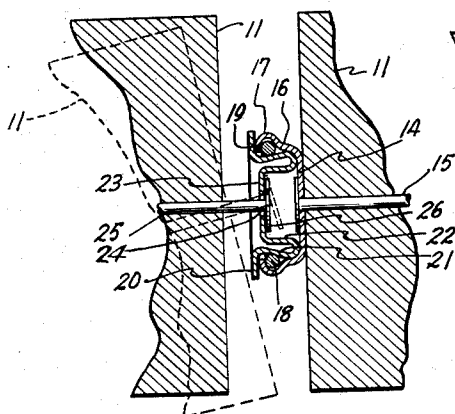


Fig. 6.



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COUPLING DEVICE FOR TOY TRAIN SETS

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6 Claims. (Cl. 46—216)

This invention relates to a coupling device for toy train sets. While my invention is capable of other uses, it is particularly adapted for use in coupling both the cars and tracks of toy trains, particularly those of simple wood or plastic construction.

While various types of coupling devices have been used in the past, it is believed that the present invention has certain distinct advantages over those previously known in the art.

It is an object of my invention to provide a coupling device which is so simple and straightforward in its operation that units coupled with my device can be easily and successfully assembled and disassembled by a very young child. In this way, toys utilizing my device are capable of more universal appeal and can be sold to a larger market than toys which are beyond the capabilities of the younger child.

It is a further object of my invention to provide a coupling device which permits the units coupled thereby to move to a limited degree vertically, horizontally, or in any combination thereof with respect to each other. In this manner, the cars of a toy train, for example, are capable of moving over a bridge or around a corner or both at the same time without becoming uncoupled and the track units can be used to form a bridge or grade.

In essence, my invention contemplates a coupling device comprising two fastener halves, one of which is mounted on each of the units being coupled. The two halves are adapted to be coupled together by a simple direct movement of one toward the other and to hold such coupling in the manner of a snap fastener. The halves are adapted to be uncoupled by moving the units directly apart from each other. One of the fastener halves is preferably rigidly mounted on its unit, while the other fastener half is more freely mounted in such a manner as to permit universal swiveling movement. This swivel action permits one of the coupled units to be moved laterally or in any desired direction with respect to the other unit without breaking or in any way affecting the coupling between them.

It is accordingly an object of my invention to provide a coupling device for toy train sets having all of the advantages and benefits of the structure set forth above. My invention also comprises such other objects, advantages and capabilities as will later more fully appear and which are inherently possessed by my invention.

While I have shown in the accompanying drawings preferred embodiments of my invention, it should be understood that the same are susceptible of modification and change without departing from the spirit of my invention.

Referring to the drawings, Fig. 1 is a side elevational view on a reduced scale of a toy train and track assembly showing movement of the train over a bridge, both the train and track units being coupled with my device;

Fig. 2 is a top plan view of the end portions of two

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units of track joined by my coupling device, with a portion of one track unit being broken away to show the coupling device;

Fig. 3 is a side elevational view of a pair of train units joined together with my coupling device, each train unit having an additional coupling fastener half on the free end thereof, the train units being mounted on portions of a pair of track units joined together with my coupling device;

Fig. 4 is an enlarged view taken on line 4—4 of Fig. 3, showing one fastener half;

Fig. 5 is an enlarged view taken on line 5—5 of Fig. 3, showing the other fastener half;

Fig. 6 is a sectional view taken on line 6—6 of Fig. 3, with movement of one unit being shown in dotted lines.

A preferred embodiment which has been selected to illustrate my invention comprises a toy train set which includes a plurality of separate track units 10 which are adapted to be joined together to provide a continuous track and a plurality of separate car units 11 which are adapted to be joined together to provide a train which is mounted for movement along the track. The track units 10 may include curves, bridges and the like. The car units 11 may include locomotives, tank cars, freight cars, cabooses and many other types of car units in simulation of those used on railroads. It should also be understood, of course, that the car units 11 may simulate and take the shape of automobiles, trucks, barges, luggage carriers, animals or any other objects suitable for use by a child in play.

The coupling device of my invention is used in the identical form to join both the track units 10 and car units 11 together. The coupling device comprises a socket 12 and a stud 13, which are complementarily formed and which are preferably attached to the opposite ends of each of the track units 10 and car units 11.

The socket 12 comprises a flat circular base 14, which lies flat against the end of the track unit 10 or car unit 11. A nail 15 or other suitable fastening member extends through the center of the base 14 from the inside of the socket 12 into the track unit 10 or car unit 11 in such a manner that the base 14 is firmly held against the end of the track unit 10 or car unit 11.

The substantially cylindrical side wall 16 of the socket 12 extends transversely from the base 14 and then parallel thereto to provide a spring holding portion 17 which is circular in circumference and substantially semi-circular in cross section. Mounted and held within this spring holding portion 17 is a spring 18. The spring 18 is of the split ring type, comprising a circular member with a short portion cut away so that its circumference is capable of being slightly enlarged under pressure. The free ends 19 of the side walls 16 which form the top of the spring holding portion 17 are directed substantially parallel to the base 14 and act to prevent the spring 18 from slipping out of the spring holding portion 17 of the socket 12.

The stud 13 comprises a flat base 20, which extends around its periphery. The outer side wall 21 of the stud 13 extends at substantially a right angle from the base 20, but diverges slightly outwardly from the center of the stud 13. It then loops back to provide an inner side wall 22, which extends substantially transversely to the base 20. The inner side wall 22 terminates short of the base 20 to provide a floor 23, which extends substantially parallel to the base 20 and which is spaced therefrom.

The floor 23 is provided with a central aperture 24 through which extends the shank 25 of a nail 26 or other suitable fastening member which extends into the track

unit 10 or car unit 11. It will be noted that the aperture 24 is slightly larger in diameter than the shank 25 of the nail 26, to permit canting of the shank 25 with respect to the stud 13. The nail 26 is, however, provided with a head 27 which is disposed within the stud 13 and which is larger in diameter than the aperture 24. The nail 26 does not extend into the track unit 10 or car unit 11 for its entire length. Instead, a portion of its shank 25 protrudes from the end of the track unit 10 or car unit 11.

In use, the stud 13 and socket 12 may be joined together by placing the stud 13 adjacent to the socket 12 and exerting pressure tending to move them toward each other. The stud 13 then moves into the socket 12, with the outer side wall 21 of the stud 13 exerting pressure against the ring 18 and causing it to enlarge its circumference. The outer side wall 21 then moves into the socket 12 until the spring 18 fits within the narrower portion of the outer side wall 21 and the end of the stud 13 engages the inside of the base 14 of the socket 12.

The stud 13 and socket 12 are then firmly joined together, the spring 18 resisting their separation by its engagement with the outer side wall 21 of the stud 13. In order for the fastener halves to be separated, it is necessary to exert separating force upon them sufficient so that the diverging outer side wall 21 of the stud 13 will cause the spring 18 to enlarge its circumference and permit them to move past it and uncouple the stud 13 and socket 12.

The essential novelty of my invention lies in the relationship which is achieved between the track units 10 or car units 11 when they are joined together with my coupling device. It will be noted that with the construction shown each of the track units 10 or car units 11 is universally swivelably mounted with respect to the adjacent unit to which it is coupled. In other words, each unit can move to a limited degree in any direction with respect to the adjacent unit without in any way affecting the coupling between them. In this way, each car unit 11, for example, can move independently of the other car units 11 to the side when turning a corner or vertically when crossing a bridge without breaking the coupling or interfering with the movement or operation of the adjacent or other car units 11.

This is accomplished by reason of the free pivotal relationship between the stud 13 and the nail 26. One such pivotal movement is illustrated in dotted lines in Fig. 6 of the drawings. It will be noted that the head 27 of the nail 26 is free to cant within the space between the floor 23 of the stud 13 and the base 14 of the socket 12. The shank 25 of the nail 26 is also free to cant within the aperture 24. All of this is accomplished without in any way affecting the firm attachment of the stud 13 and socket 12.

In the case of a toy train, my coupling device is particularly desirable in that it permits the train to move around curves and up and down bridges and hills without difficulty of any kind. It also permits the track units to form bridges, upgrades and downgrades, without the track units becoming uncoupled.

It should also be noted that the space between the top of the head 27 of nail 26 and the base 14 of socket 13 is equal to or slightly greater than the distance between the base 20 and the unit 10 or 11. It is thus possible for the unit 10 to move toward the stud 13 until the base 20 lies flat against the end of the unit 10 or 11, to provide close coupling between the units 10 or 11 in addition to the freely pivotable coupling described above. Fig. 2 of the drawings, for example, illustrates such close coupling of a pair of track units 10. It is thus possible to use the same coupling device to provide close coupling between the track units 10 and free coupling between the car units 11.

The use of a uniform coupling device of the type described above provides the benefits of simplicity and uni-

formity in manufacture and in use by the child. It also permits any or all of the units to be coupled in the same manner, to provide additional play values and possibilities. As one example, a length of track can be coupled to a car and hauled behind it to simulate the construction of a railroad.

While I have shown the stud 13 as being freely mounted and the socket 12 as being fixedly mounted, it will be understood that this arrangement can easily be reversed with suitable modifications obvious to one skilled in the art.

I claim:

1. A toy comprising a plurality of movable units disposed in sequential relationship to each other, a coupling device removably coupling the adjacent units to each other, said coupling device comprising a stud and a socket formed complementarily to each other, said stud being attached to one of said adjacent units and said socket being attached to the other of said adjacent units, said socket having a flat circular base, said base being disposed against the end of the unit, said socket having side walls extending transversely to said base and then substantially parallel to said base to provide a circular spring holding portion, a substantially circular split ring spring mounted and held within said spring holding portion, the diameter of said spring normally being slightly less than the diameter of said spring holding portion, said stud including a circular base disposed adjacent the end of said unit, an integral outer side wall extending substantially transversely to said base, said outer side wall diverging slightly outwardly from the center of said stud, said outer side wall being looped back to form an integral inner side wall extending substantially transversely to said base, said inner side wall terminating in an integral circular floor extending substantially parallel to the base of said stud, said floor having a central aperture extending therethrough, a nail having a shank extending through said aperture, the diameter of said shank being smaller than that of said aperture, the said nail having a head disposed on the opposite side of said floor from said unit, said nail being fixedly mounted on the end of said unit, said stud and socket adapted to be coupled and uncoupled by the interaction of the outer side wall of said stud and the spring of said socket, said stud being adapted to cant with respect to said nail to permit the units coupled by said device to swivel in any direction with respect to each other without interfering with the coupling or movement of said units.

2. The structure described in claim 1, the distance between the end of said unit to which said stud is attached and the head of said nail being slightly less than the distance between the end of said side walls and said floor, so that the ends of a pair of units coupled by said stud and socket can be disposed closely adjacent each other, with the base of said stud being disposed against the end of the unit to which said stud is attached and the head of said nail being disposed adjacent the base of said socket.

3. A toy comprising a plurality of movable units disposed in sequential relationship to each other, a coupling device removably coupling the adjacent units to each other, said coupling device comprising a stud and a socket formed complementarily to each other, said stud being attached to one of said adjacent units and said socket being attached to the other of said adjacent units, said socket having a spring holding portion, a substantially circular split ring spring mounted and held within said spring holding portion, the diameter of said spring normally being slightly less than the diameter of said spring holding portion, said stud including an outer side wall extending substantially transversely to said unit, said outer side wall diverging slightly outwardly from the center of said stud, said stud having a floor, said floor having an aperture extending therethrough, a nail having a shank extending through said aperture, the diameter of said shank being smaller than that of said

aperture, said nail having a head disposed on the opposite side of said floor from said unit, said nail being fixedly mounted on the end of said unit, said stud and socket adapted to be coupled and uncoupled by the interaction of the outer side wall of said stud and the spring of said socket, said stud being adapted to cant with respect to said nail to permit the units coupled by said device to swivel in any direction with respect to each other without interfering with the coupling or movement of said units.

4. A toy comprising a plurality of movable units disposed in sequential relationship to each other, a coupling device removably coupling the adjacent units to each other, said coupling device comprising a stud and a socket formed complementarily to each other, said stud being attached to one of said adjacent units and said socket being attached to the other of said adjacent units, said socket having a spring holding portion, a substantially circular split ring spring mounted and held within said spring holding portion, the diameter of said spring normally being slightly less than the diameter of said spring holding portion, said stud including an outer side wall extending substantially transversely to said unit, said outer side wall diverging slightly outwardly from the center of said stud, said stud being swivelly mounted on a fastening member fixedly attached to the end of said unit, said stud and socket adapted to be coupled and uncoupled by the interaction of the outer side wall of said stud and the spring of said socket, said stud being adapted to cant with respect to the unit to which it is attached to permit the units coupled by said device to swivel in any direction with respect to each other without interfering with the coupling or movement of said units.

5. A toy comprising a plurality of movable units disposed in sequential relationship to each other, a coupling device removably coupling the adjacent units to each other, said coupling device comprising a pair of snap fastener halves formed complementarily to each other, one of said snap fastener halves being attached to one of said adjacent units and the other of said snap fastener halves being attached to the other of said adjacent units, said snap fastener halves adapted to be fastened together by movement of the portions of said units carrying said snap fastener halves toward each other until said snap fastener halves move into abutting relationship to each other and snap into engagement with each other and unfastened by movement of said units away from each other until said snap fastener halves snap out of engagement with each other, at least one of said snap fastener halves being loosely and swivelly mounted on a fastening member, the inner end of which is secured to the unit, said fastening member having a

shank extending outwardly from said unit, said snap fastener half having an opening therein which is larger than said shank, said shank extending through said opening so that said snap fastener half is loosely mounted on said shank, means at the outer end of said shank limiting the outward movement of said snap fastener half, said snap fastener half being free to swivel on said shank with respect to the unit to which it is attached so that said shank extends at an angle through said opening to permit the units coupled thereby to swivel with respect to each other without interfering with the coupling or movement of said units.

6. A toy comprising a plurality of movable units disposed in sequential relationship to each other, a coupling device removably coupling the adjacent units to each other, said coupling device comprising a pair of fastener halves formed complementarily to each other, one of said fastener halves being attached to one of said adjacent units and the other of said fastener halves being attached to the other of said adjacent units, said fastener halves including complementary resilient means whereby said fastener halves may be fastened together by movement of the portions of said units carrying said fastener halves toward each other until said fastener halves move into abutting relationship to each other and resiliently engage each other and unfastened by movement of said units away from each other until said fastener halves disengage from each other, at least one of said fastener halves being loosely and swivelly mounted on a fastening member, the inner end of which is secured to the unit, said fastening member having a shank extending outwardly from said unit, said fastener half having an opening therein which is larger than said shank, said shank extending through said opening so that said fastener half is loosely mounted on said shank, means at the outer end of said shank limiting the outward movement of said fastener half, said fastener half being free to swivel on said shank with respect to the unit to which it is attached so that said shank extends at an angle through said opening to permit the units coupled thereby to swivel with respect to each other without interfering with the coupling or movement of said units.

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