May 15, 1934. A. H. HARDMAN ET AL 1,958,662

COUPLER

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Fig. 1.

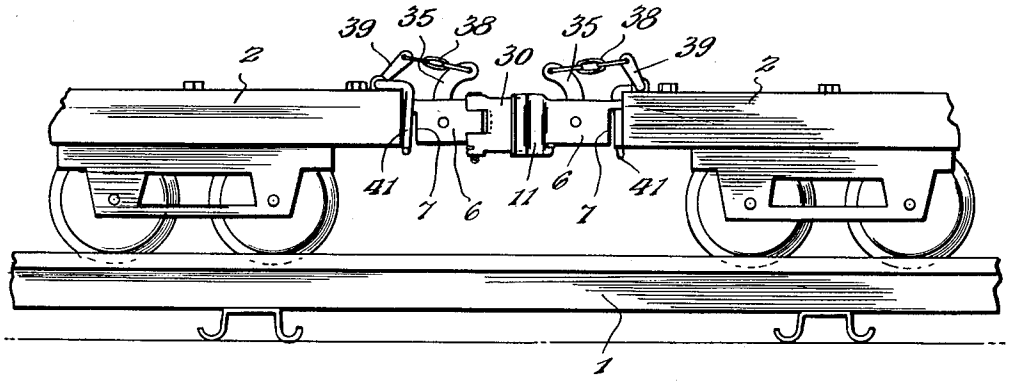


Fig. 2.

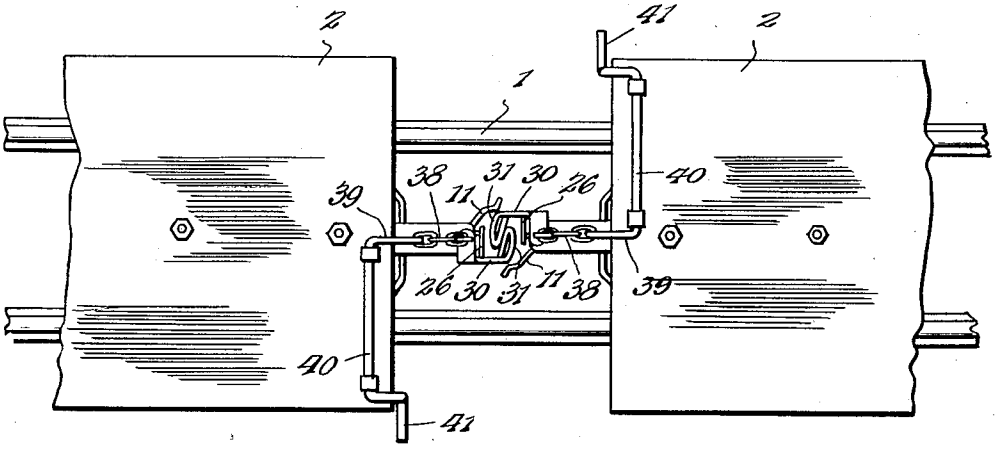


Fig. 8.

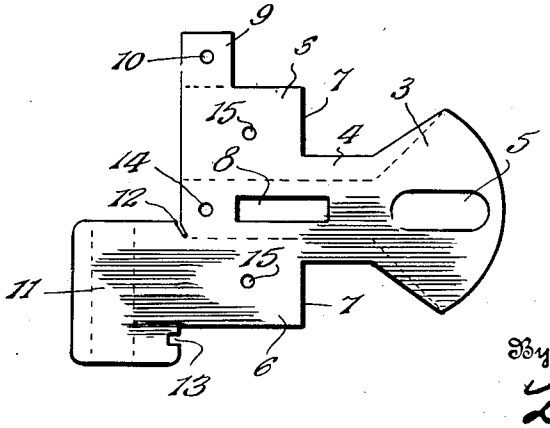
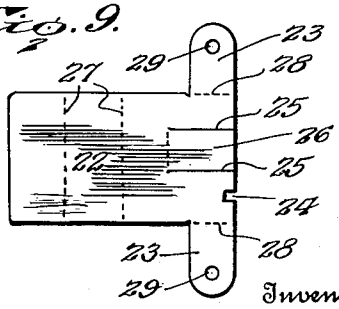


Fig. 9.



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Fig. 3.

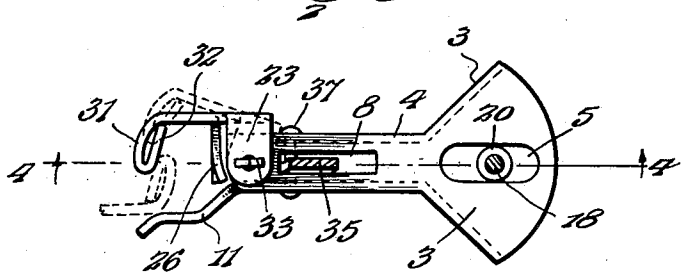


Fig. 4.

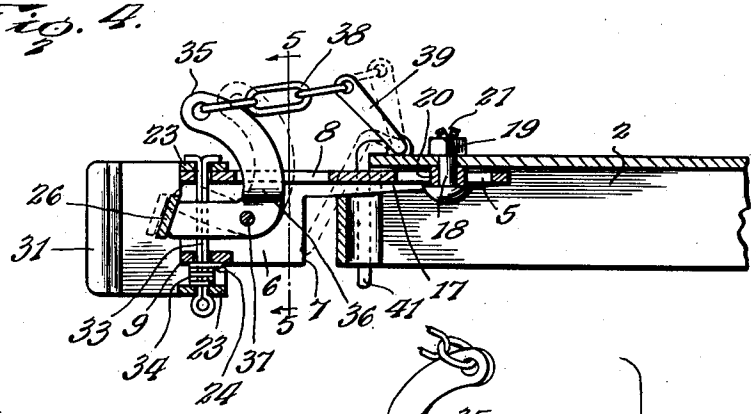


Fig. 5.

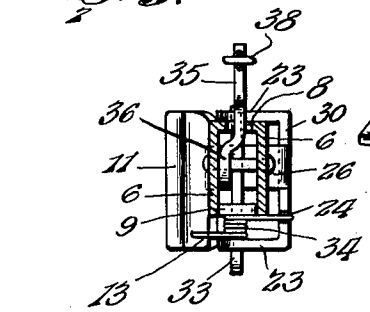


Fig. 6.

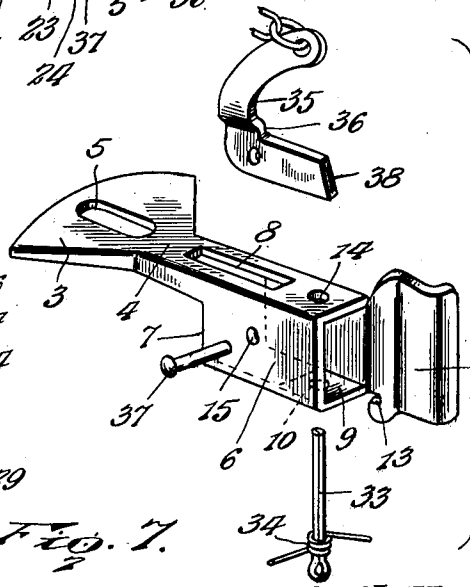
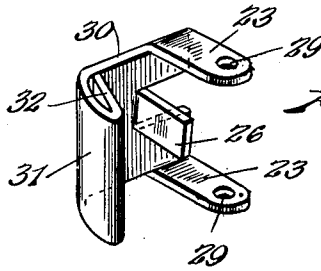


Fig. 7.



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UNITED STATES PATENT OFFICE

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COUPLER

Albert H. Hardman and Bernard L. Helfer,
Wheeling, W. Va.

Application March 23, 1932, Serial No. 600,748

4 Claims. (Cl. 213—100)

This invention is a coupler for toy trains and its object is to provide a coupler which may be manufactured at a low cost and easily applied to toy cars and manipulated in a manner closely simulating the action of automatic couplers employed on railroads at the present time. The invention is illustrated in the accompanying drawings and consists in certain novel features which will be hereinafter first fully described and then more particularly pointed out in the appended claims.

In the drawings, Figure 1 is a side elevation of end portions of two cars joined by our improved couplers.

Fig. 2 is a top plan view of the same,

Fig. 3 is an enlarged plan view of one coupler with a part in section,

Fig. 4 is a longitudinal section on the line 4—4 of Fig. 3,

Fig. 5 is a transverse section on the line 5—5 of Fig. 4,

Fig. 6 is a detail perspective view of parts of the coupler housing and releasing lever shown disassembled but in their proper relative positions,

Fig. 7 is a detail perspective view of the knuckle or pivoted jaw,

Fig. 8 is a plan view of the blank from which the main body or housing of the coupler is formed,

Fig. 9 is a similar view of the blank from which the knuckle or pivoted jaw is formed.

In the drawings, we have shown a track 1 and end portions of cars 2 mounted on the track and which may be of any well-known or approved construction. In carrying out the invention, we provide a blank, shown in Fig. 8, of sheet metal having a portion 3 the side edges of which are flared and extend from a short neck 4 having parallel side edges, the end of the portion 3 being arcuate and a longitudinal slot 5 being formed therein. From the sides of the portion 4, wings 6 extend laterally, the rear edges of said wings being at right angles to the side edges of the neck 4, as shown at 7, and a longitudinal slot 8 being formed in the neck 4 and the body having the wings 6, as clearly shown. From the side edge of one wing 6, at the forward end thereof, extends a tongue 9 having an opening 10 therethrough and from the forward edge of the opposite wing 6 extends a plate 11 from which the guide arm of the coupler is produced. This plate 11 is of a general rectangular form and has a slight notch 12 formed in the angle between its rear edge and the forward edge of the body of the blank, and at the opposite side, in its rear edge, is a notch 13, the functions of which will presently appear. An opening 14 is formed through the body portion of the blank and openings 15 are formed through the wing sections 6. The blank which has just been described is stamped to form the coupler housing, shown in Fig. 6, the edges of the flared portion 3 and the neck 4 being turned down slightly to provide flanges, shown most clearly at 17 in Fig. 4, and the wings 6 being turned down to form parallel side plates of the housing which, when the device is applied to the car body, will be disposed in advance of the end of the car with the edges 7 disposed vertically and constituting bumpers to abut the adjacent end of the car to limit the sliding movement of the coupler. The lug 9 is bent at a right angle to the sides 6 and constitutes the bottom of the housing at the outer end thereof while the plate 11 is disposed vertically and is slightly crimped, as best shown in Figs. 2 and 3, so that it projects somewhat laterally from the housing and constitutes a guide arm whereby the knuckle or pivoted jaw of a mating coupler will be guided toward the central line of the coupler and into engagement with the jaw on the coupler. The coupler housing will be mounted upon the car by a bolt 18 inserted through the slot 5 in the floor of the car and held by a nut 19 mounted on the end of the bolt and turned home against the floor of the car, as shown in Fig. 4, a spacing washer 20 being preferably fitted about the bolt between its head and the underside of the car floor. The end of the bolt is preferably split, as indicated at 21, whereby, after the nut 19 is turned home, the ends of the bolt may be spread and thereby lock the nut against loosening.

The blank 22, is shown in Fig. 9, is oblong with lateral tongues 23 at one end and provided at said end with a notch 24 and with slits 25 defining a longitudinal tongue 26. This blank is preferably scored on the lines 27 extending across the body of the blank and by lines 28 at the connections of the tongues 23 with the body. Openings 29 are formed through the tongues 23, as shown. This blank is stamped to form the knuckle or pivoted jaw 30, shown most clearly in Fig. 7, the tongues 23 being bent into parallel relation and at right angles to the body of the blank and the body of the blank being folded upon itself on the lines 27 to form webs 31 and 32 disposed vertically and transversely to the jaw. The longitudinal tongue 26 is struck up to extend laterally from the body of the jaw between the lugs 23 and disposed obliquely, as best shown in Fig. 4. In assembling the jaw with the coupler housing,

the tongues or lugs 23 are disposed, respectively, above and below the outer end of the housing with the openings 29 alined axially with the openings 10 and 14 and a retaining pin or bolt 33 is then inserted upwardly through the alined openings and its end spread and bent over the upper lug 23, as shown clearly in Fig. 4, whereby the parts will be held together. A torsion spring 34 is provided about the lower portion of the retaining pin 33, between the lower lug 23 and the lug 9 which forms the bottom of the coupler housing, one end of this spring being engaged in the notch 13 of the guide arm 11 and the opposite end thereof being engaged in the notch 24 of the knuckle or jaw. When the parts have been thus assembled, the transverse webs 31 and 32 of the knuckle or pivoted jaw will be disposed in advance of the coupler housing and will be directed toward the guide arm 11 leaving a space between the jaw and the guide arm through which the corresponding webs of a mating coupler may pass when the cars are to be coupled, as indicated in Fig. 3. There is also provided an uncoupling lever 35 which may conveniently be stamped from a flat strip and may be slightly offset intermediate its ends, as shown at 36, whereby to avoid conflict with the other parts of the coupler. This lever is pivoted at its angle by a pin 37 inserted through the openings 15 in the sides of the coupler housing and through the lever, as will be understood. The lower arm of the lever extends longitudinally of the coupler and its end is beveled, as shown at 38, to mate with the tongue 26 so that, if the lever be rocked as shown by the dotted lines in Fig. 4, the tongue 26 will be shifted to impart a lateral rocking movement to the knuckle or jaw, as will be understood by reference to the dotted lines in Figs. 3 and 4. A short chain or flexible connection 38 is attached to the upper end of the lever 35 and connects the same with a crank 39 at the inner end of a rock shaft 40 which is journaled upon the floor of the car body and provided with an operating handle 41 at its outer end of any convenient form. This rock shaft and releasing lever 35 are provided to impart realism to the device and it will be understood that they are not absolutely necessary to the successful operation.

Couplers having been suitably mounted upon the ends of two car bodies, the cars are brought together in the position shown in Fig. 2 and the knuckle or pivoted jaw of each coupler will impinge upon the guide arm 11 of the meeting couplers and will be thereby diverted toward the central longitudinal line of the device, as indicated by the dotted lines in Fig. 3, so that the transverse webs 31 and 32 of each knuckle will pass to the rear of the other knuckle. The springs 34 will permit the knuckles to yield to the passing engagement and contact and as soon as the knuckles have cleared each other the springs will swing them into coupling engagement. By bending the body of the knuckle or jaw more acutely toward the longitudinal line of the coupler, greater holding strength will be imparted to the jaw, and, of course, it will be understood that greater force is required to uncouple the devices than is needed to couple them. The cars may be uncoupled by merely lifting one car vertically with respect to the other car, but the releasing lever 35 has been provided to impart realism, as has been stated. The coupler is exceedingly efficient and may be produced at a very low cost. The slotted mounting of the body of the coupler upon the car permits it to yield to the impact of a mating coupler, and the shoulders 7, by abutting the end of the car, will limit the sliding movement. The laterally flared portion at the end of the coupler housing provides a segmental bearing plate for contact with the lower face of the platform of the car and thus permits the coupler housing to swing laterally either to the right or to the left when the cars are traveling on curved sections of track.

Having thus described the invention, we claim:

1. A coupler comprising a coupler housing, a vertically crimped guide arm at one end of the housing disposed obliquely relative thereto, a knuckle pivotally mounted on the housing at said end thereof and extending therefrom at the side opposite the guide arm, an obliquely disposed tongue extending inwardly from the knuckle, yieldable means holding the knuckle toward the guide arm, and an operating member pivotally mounted on the coupler housing and provided with a beveled end adapted to engage the oblique tongue to effect release of the knuckle from an engaged knuckle.

2. A toy coupler comprising a coupler housing having a guide arm at its end, a knuckle pivotally mounted at the end of the housing and disposed at the side thereof opposite the guide arm and provided at its free edge with a transverse web extending toward the guide arm, an obliquely disposed tongue extending inwardly from the knuckle, an operating lever pivotally mounted on the coupler housing and provided with a beveled end adapted to engage the oblique tongue to effect opening of the knuckle, and a torsion spring having one end thereof engaged with the guide arm and its other end engaging the knuckle at one side of the pivot of said knuckle and tending to normally and yieldably hold the knuckle toward the guide arm.

3. A toy coupler comprising a coupler housing having a longitudinal slot therein, a guide arm at the end of the housing, a knuckle pivoted to the housing and extending therefrom at the side opposite the guide arm and having a transverse web projecting toward the guide arm, a torsion spring having one end thereof engaged with the guide arm and its other end engaging the knuckle at one side of the pivot of said knuckle and tending to normally and yieldably hold the knuckle toward the guide arm, a tongue projecting inwardly from the knuckle, and a lever having its intermediate portion pivotally mounted in the coupler housing and provided with angularly disposed arms one of which engages the tongue and the other being extended through the slot in the coupler housing for attachment to an operating device whereby to effect release of the knuckle from an engaged knuckle.

4. A toy coupler comprising a coupler housing, a guide arm extending from the end of the housing, a knuckle pivoted upon the end of the housing and projecting therefrom at the side opposite the guide arm, a spring engaged with the knuckle at one side of the pivot thereof and with said guide arm and yieldably holding the knuckle toward the guide arm, a tongue on the knuckle projecting toward the guide arm, a lever pivoted within the housing and having its end bearing against said tongue, and means for operating said lever.

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