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W. G. DANIELS

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TOY TRAIN DRAFT COUPLING

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Fig. 1.

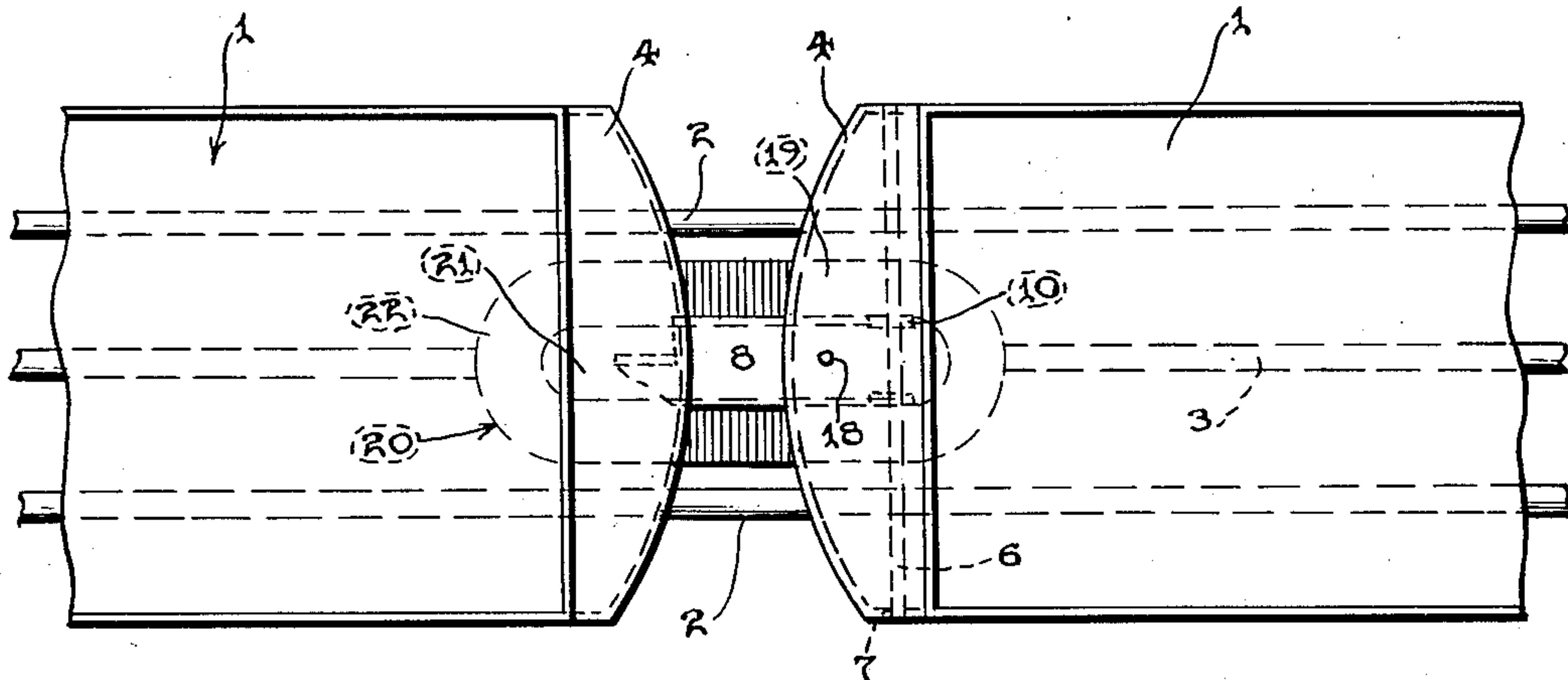


Fig. 2.

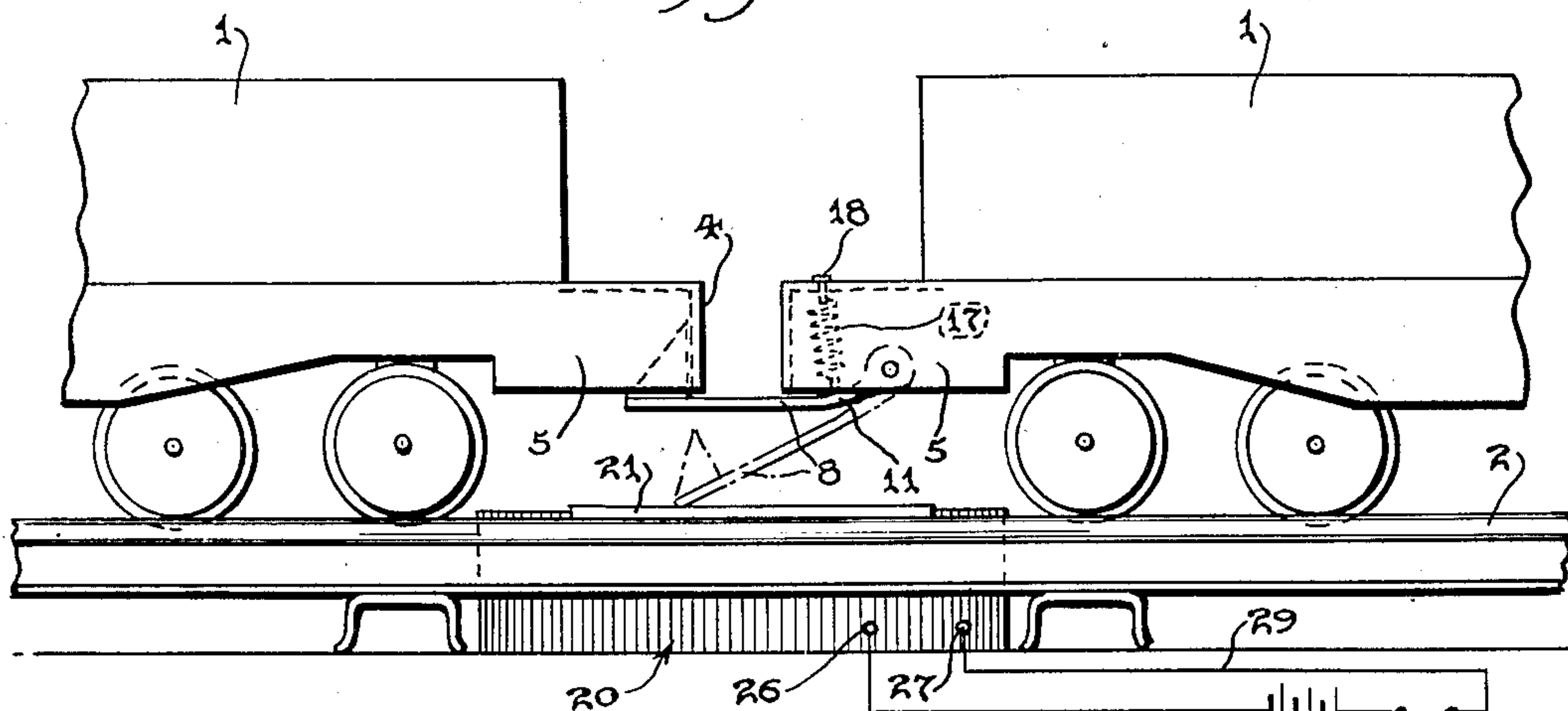


Fig. 3.

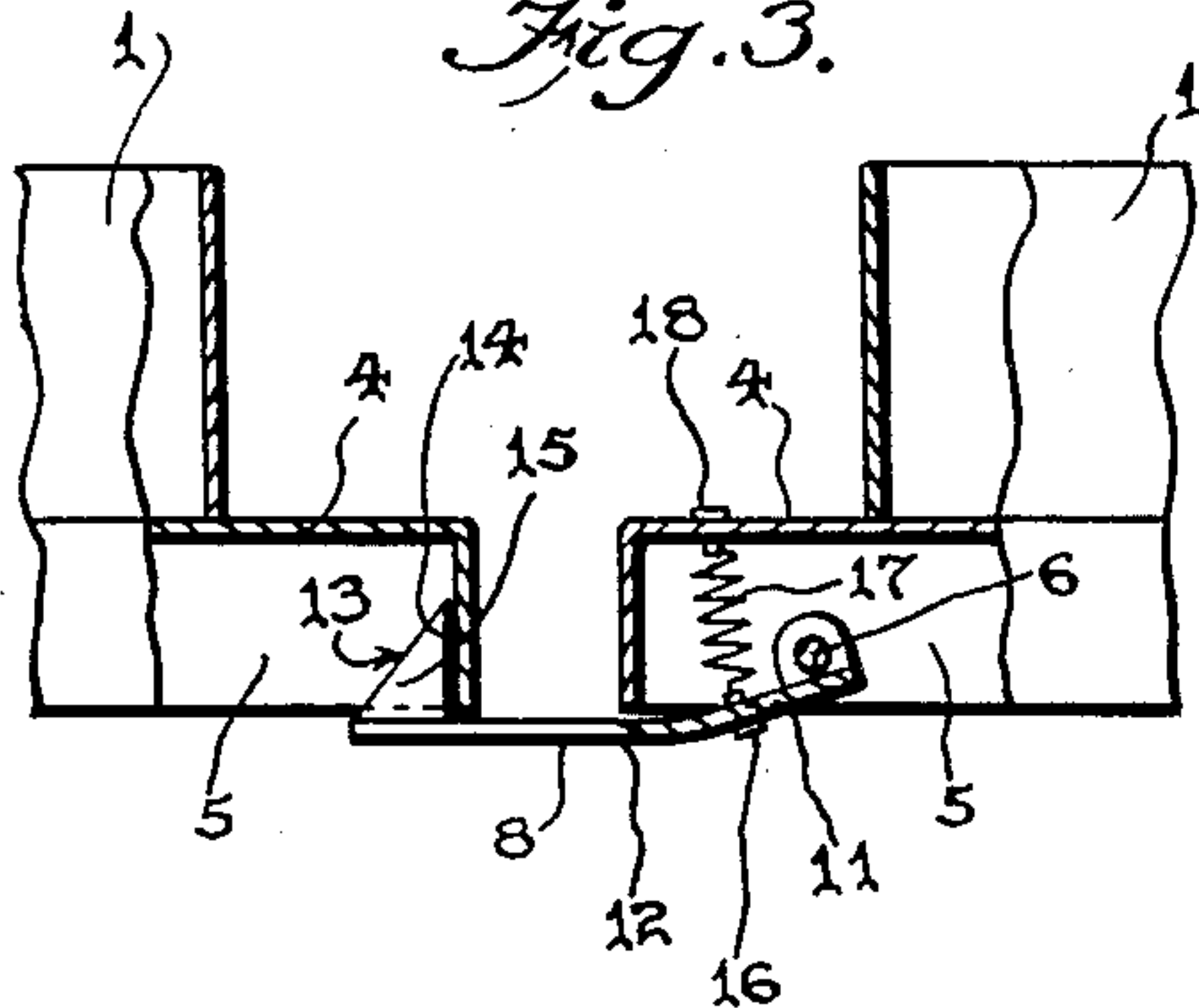
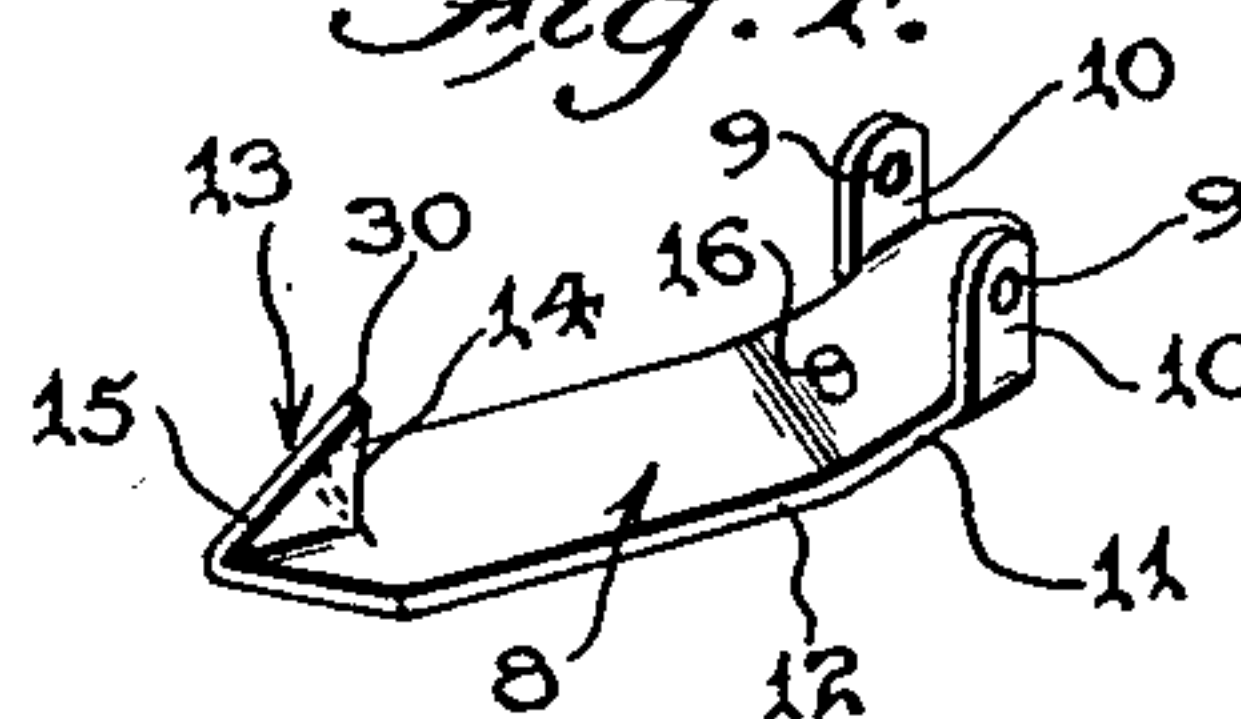


Fig. 4.



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TOY TRAIN DRAFT COUPLING

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My invention relates to draft couplings, more particularly to a draft coupling for use in coupling and uncoupling toy trains, and it consists of the combinations, constructions, and arrangements herein shown and described.

The object of my invention is to provide a coupling for use on toy trains and the like which will automatically perform the coupling operation when the cars are brought together and which will further be adapted for uncoupling at the will of an operator by control from a distant point.

A further object of my invention is to provide a coupling of the type described which will accommodate without undue stress or strain on either said coupling or the cars lateral forces and motions exerted on said coupling and said cars during the passage of the same about curves or during other operations occasioning such forces.

A still further object of my invention is to provide a coupling which is so related to the cars, which it fastens, that it will allow said cars to abut one another for pushing operations with a consequent release of undue stress and strain on said coupling during this operation.

A yet further object of my invention is to provide a coupling for toy railroad trains and the like which will be adapted for manual actuation if so desired.

A final object of my invention is to provide a device of the type described which has few parts, will not get out of order easily, and is simple to manufacture.

Other objects and advantages will appear as the specification proceeds and the device will be more particularly defined in the appended claims.

My device is illustrated in the accompanying drawing forming a part of this application in which

Figure 1 is a top plan view of the abut-

ting ends of a pair of toy railroad cars equipped with my invention,

Figure 2 is an elevational view of Figure 1,

Figure 3 is a detail view of a portion of the device, and

Figure 4 is a further detail view of the same portion of the device.

In carrying out my invention I make use of a pair of railroad cars, 1, which may be of any suitable construction as regards their body portions but which have their ends specially adapted to my invention, as will be described later on in the specification. These cars, as shown in Figures 1 and 2, are positioned for movement on a railroad track consisting of the rails, 2. What is commonly known as a third rail, 3, supplies electrical current to the toy locomotive (not shown) for propulsion of the cars about the track, as is well understood in the art.

The ends of these cars are similarly formed, having end walls, 4, of arcuate formation with depending flange portions, 5, extending thereabout and along the sides of the cars in a manner similar to the side walls of a can cover.

For mounting the coupling member, one of these abutting ends of the cars 1 is provided with a laterally extending shaft, 6. This shaft may be mounted in the depending flange portion 5 as clearly indicated at 7 in Figure 1.

Rotatably secured at the center or approximately at the center of this shaft 6 is the hook 8 which forms my coupling proper. This hook is secured to said shaft by means of spaced aligned bores, 9, in the upstanding ears, 10. Its body portion slopes downwardly gradually from said ears as indicated at 11, straightening out to a horizontal position as shown at 12 to form that part which extends between the abutting ends of the cars. It is equipped with an upstanding hook member, 13, at its outer extremity, having a vertically extending edge, 14, for engagement with the

inner portion of the flange wall 4 and an edge, 15, placed at an angle to the horizontal to accomplish functions that will soon be made clear. The coupling member proper is further provided with a stud or screw, 16, or other suitable fastening member to which one end of a tension member, such as the resilient tension spring, 17, is anchored. The other end of this spring 17 is secured by a bolt or screw, 18, or other suitable fastening means to the floor, 19, of the end portion 4 of the car 1 on which the coupling proper is mounted. This spring is so graduated and formed that it tends to normally urge the coupling member proper into the upward or coupled position, as shown most clearly in Figure 2.

This coupling proper is formed of iron or steel so as to be attracted by a magnetic field for a purpose that will be made clear further on in the specification.

For attracting the coupling proper, comprising the lever 8, I provide centrally of the track comprising the rails 2 an electro-magnet, generally indicated at 20, having an iron core, 21, surrounded by an electric coil, 22. This electro-magnet is so situated that it will not interfere with the electrical system operating the locomotive of the toy train being split or placed below the level of the same if necessary. As shown in Figure 2, it may project just a little above or beyond the level of the rails 2 of the tracks.

For energizing and de-energizing said electro-magnet, an electrical circuit, 23, is provided, having a source of electrical energy, 24, which may consist of a storage battery or any other suitable means, a switch, 25, for movement by an operator for controlling the circuit, and taking into the coil of the electro-magnet by terminals, 26 and 27.

The current in this circuit is traced as follows: From the source of electrical energy, 24, through the connecting wire, 28, to terminal, 26, through coil, 22, terminal 27, conductor 29, switch 25, and back to the source of electrical energy 24.

From the foregoing description, the use and operation of my device is easily understood. When the operator desires to couple the cars, he merely brings them together or causes them to be brought together by operation of the locomotive or in some similar manner. When the ends of the cars approach one another, the portion 15 of the hook 13 will engage the lower edge of the depending flange 4 to be cammed downwardly by said edge 15 against the tension of spring 17, until the apex 30 of said hook is reached, whereupon the same will be pulled upwardly by the spring 17 until the wall 14 engages with the inner side of the flange 4, all in a manner easily understood. The operator may, of course, accomplish this coupling relation-

ship by manual means merely by pressing downwardly upon the coupling proper 8.

When the operator desires to uncouple the cars, he has simply to close switch 25 during the passage of the coupling over electro-magnet 20, upon which passage when the magnet is so energized, said coupling proper will be drawn downward by said magnet against the tension exerted by spring 17, in a manner shown by the dotted line view of Figure 2. The forward or draft car to which the coupling proper is preferably secured will then go forwardly at a greater rate of speed than that under which the drawn car is proceeding. When the coupling proper passes off of the electro-magnet therefore and is drawn to the upward position by the spring 17, the distance between the cars will be so great that the same will not engage with the rearmost car. The length of this electro-magnet may be so adjusted as to assure this operation.

Switching operations too numerous to mention can be carried out by the use of this remote control governing means by the insertion of electro-magnets on both side tracks and main lines or in any position desired for any coupling control operations required.

If the operator desires, of course he may uncouple the cars manually by merely depressing the coupling proper and operating the cars.

Although my coupling proper is of rigid construction and rectilinearly formed, it will yet readily accommodate the passage of the cars about turns or other lateral motions of said cars because of the arcuate formation of the ends 4 about the inner wall of which the hook of the coupling is slidable.

When the cars are being pushed, the arcuately formed ends will abut one another, relieving the coupling proper of all stress and strain incident to the pushing operation. Turning motions of the cars relative to one another about the turns will be readily accommodated by movement of the point of tangency between the arcuately formed ends, in a manner that can easily be seen from an examination of Figure 1.

It is thus seen that I have provided a draft coupling for use on toy trains and the like which is adapted for automatic coupling and uncoupling under the control of an operator at a distance, as well as for manual coupling and uncoupling operations when so desired.

It is also seen that I have provided a means for coupling toy cars and the like which accommodates all lateral motions of said cars during either the pushing or pulling movements thereof and which further absolutely relieves the coupling member of stress and strain during the pushing operation.

What I desire to claim and secure by Letters Patent is:

1. In combination with the abutting ends of a pair of cars, a coupling means between said cars, said coupling means comprising a part of magnetic material, and a magnet positioned in the roadbed for coaction with said magnetic part of the coupler to uncouple the cars when said part is positioned over the magnet.

2. In combination with a pair of cars, a coupling means between said cars, said coupling means comprising a part of magnetic material, and a magnet positioned in the path traveled by said cars for coaction with said magnetic part of the coupler to uncouple the cars when said part is positioned opposite said magnet.

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