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A. L. JOHNSON
MAGNETIC COUPLING
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FIG. 1

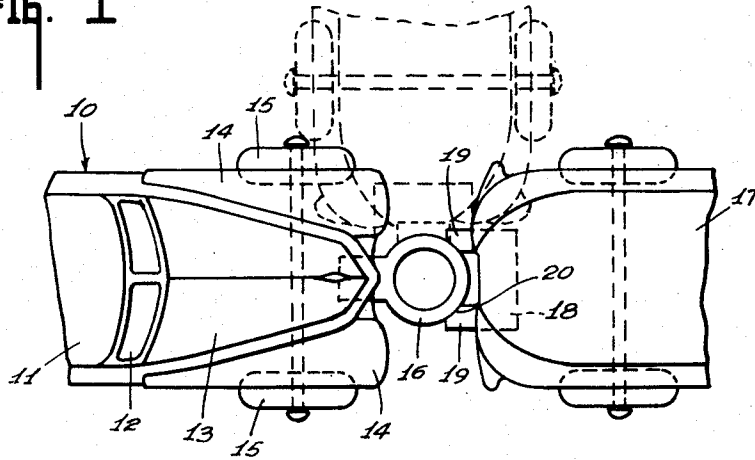


FIG. 2

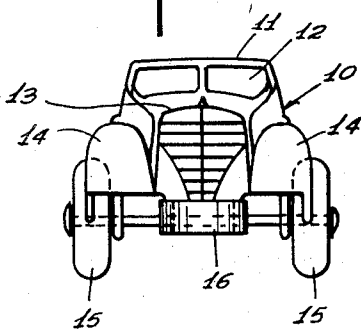
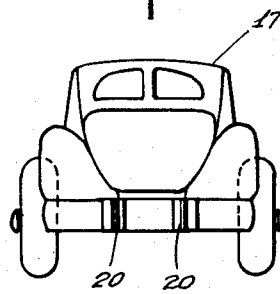


FIG. 3



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MAGNETIC COUPLING

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1 Claim. (Cl. 46-45)

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This invention relates to a magnetic coupling for use particularly with toy automobiles, trucks, busses, trains and other wheeled articles.

It is the primary object of this invention to provide a magnetic hitch or coupling of such character that at least a 90 degree arcuate turn may be negotiated by the leading toy without automatically causing a separation therefrom of the following or trailing toy to which it is coupled. This is facilitated in toy automobiles or the like by cutting away a portion of the face of the front fenders, thereby removing the obstruction that would, with the normal fenders, make a 90 degree turn impossible.

It is a further object of this invention to provide a coupling of such nature that an effective connection between the leading and the trailing toys is provided, which connection is sufficient to hold the toys in coupled relation under normal circumstances but at the same time makes it possible for a separation, one from the other, to be easily effected when desired. This is accomplished by providing a member of arcuate conformation and responsive to magnetic attraction adjacent the front bumper of the toys, and a permanent magnet of complementary conformation to said member adjacent the rear bumper of each toy, the magnets having a relatively high coercive force.

It is a further object of this invention to provide an inexpensive, simply constructed toy which is novel and entertaining and is instructive in the principles of magnetism.

It is a still further object of the present invention to provide toy automobiles, busses, trains and the like with magnetic members of similar signs so that, when desired, the trailing toy may be reversed so that it is facing in a direction opposite to the leading toy whereupon the magnetic members repel each other and cause the leading toy to be moved automatically by a manual movement of the trailing toy.

It is well recognized that there are many varieties of couplings and hitches used to connect toy trains, automobiles, busses and the like. Most of these couplings are effective upon a mechanical association of cooperating members, i. e. through a tongue and slot connection or the like. This type of mechanical coupling necessitates the use of a pivot in order to make possible an angular movement of one toy relative to the other. On the other hand, the present invention does away completely with any relatively complicated, pivoted coupling members, yet accomplishes the same result in as easy and ready a manner.

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The full nature of the invention will be understood from the accompanying drawings and the following description and claim.

In the drawings,

5 Fig. 1 is a top plan view of the invention showing one of the cooperating members affixed to the leading toy herein shown as an automobile, and the other member shown affixed to the trailing toy, the dotted lines indicating the right angle position to which one of the toys may be moved relative to the other.

10 Fig. 2 is a front elevation view of one of the cooperating members of the invention shown affixed adjacent the front bumper of a toy automobile.

15 Fig. 3 is a rear elevation view showing the other cooperating member of the invention affixed to the toy automobile adjacent the rear bumper.

20 In the drawings 10 shows a toy automobile having the ordinary top 11, windshield 12, hood 13, fenders 14 and wheels 15. It is to be understood that the invention is not limited to use with toy automobiles but may, if desired, be used on toy trains, busses and trucks or the like.

25 Extending forwardly of the wheeled toy is a circular band 16 which may be secured in any suitable manner to the front end of the toy, and is responsive to magnetic attraction. It is desirable, although not imperative, that the band be disposed centrally of the sides of the toy as shown. In addition, it should be disposed in a horizontal plane relative to the toy.

30 Extending rearwardly from the toy automobile 17 hereinafter referred to as the leading automobile is the permanently charged magnet 18, of relatively high coercive force, which is likewise positioned centrally of the sides of the toy and is coplanar and in alignment with the band. This member is herein shown to be substantially U-shaped with the two arms 19 of the U being beveled at 20 on their inner confronting faces so as to receive therein in mating relationship a segment of the circular band 16 as shown.

35 Whenever it is desired to hitch the trailing toy 10 to the leading toy 17, it is, of course, necessary only to bring the two toys in juxtaposition whereupon the trailing toy 10 is joined by magnetic attraction to the leading toy. By reason of the complementary construction of the magnet relative to the band, it is possible for either toy to be moved relative to the other without breaking the connection. In the dotted lines shown in Fig. 1 the leading toy 17 is shown disposed in right angular relation relative to the trailing toy, the connection still being maintained. It is,

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of course, apparent that when it is desired to separate the two toys it is necessary to exert only such force as is necessary to overcome the attraction of the two cooperating members.

In the event it is desired to cause one toy to be moved by the other as a result of the repellent action of the magnets, it is necessary only to reverse one of the toys relative to the other so that magnetic members of like polarity confront each other. At such times by a manual moving of one toy the other is naturally caused to travel in the same direction.

While the invention has been illustrated and described in its preferred embodiment in the foregoing drawings and description, the same is to be considered as illustrative and not restrictive in character.

The invention claimed is:

A magnetic coupling for wheeled toys comprising an annular band secured to and projecting outwardly in a horizontal plane from one end of a wheeled toy, said band being formed of a material responsive to magnetic attraction, and a permanent magnet secured to and projecting outwardly in a horizontal plane from the other end of an adjacent wheeled toy, said magnet and said

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band being coplanar and in alignment one with the other, said magnet being substantially U-shaped with its arms extending towards and confronting said band, the inner corners of the free ends of said arms being beveled to form a radius complementary to the radius of said band, said band being rotatable relative to said magnet in a horizontal arc of at least 180 degrees, whereby said wheeled toys may be coupled by magnetic attraction and swung arcuately relative to each other, a portion of the peripheral surfaces of said band always being in engagement with said bevels during a rotation of at least 180 degrees.

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