Aug. 30, 1938. E. HORN 2,128,821

SWITCH FOR DOUBLE TRACKS FOR TOY VEHICLES

Filed Jan. 14, 1937 2 Sheets-Sheet 1

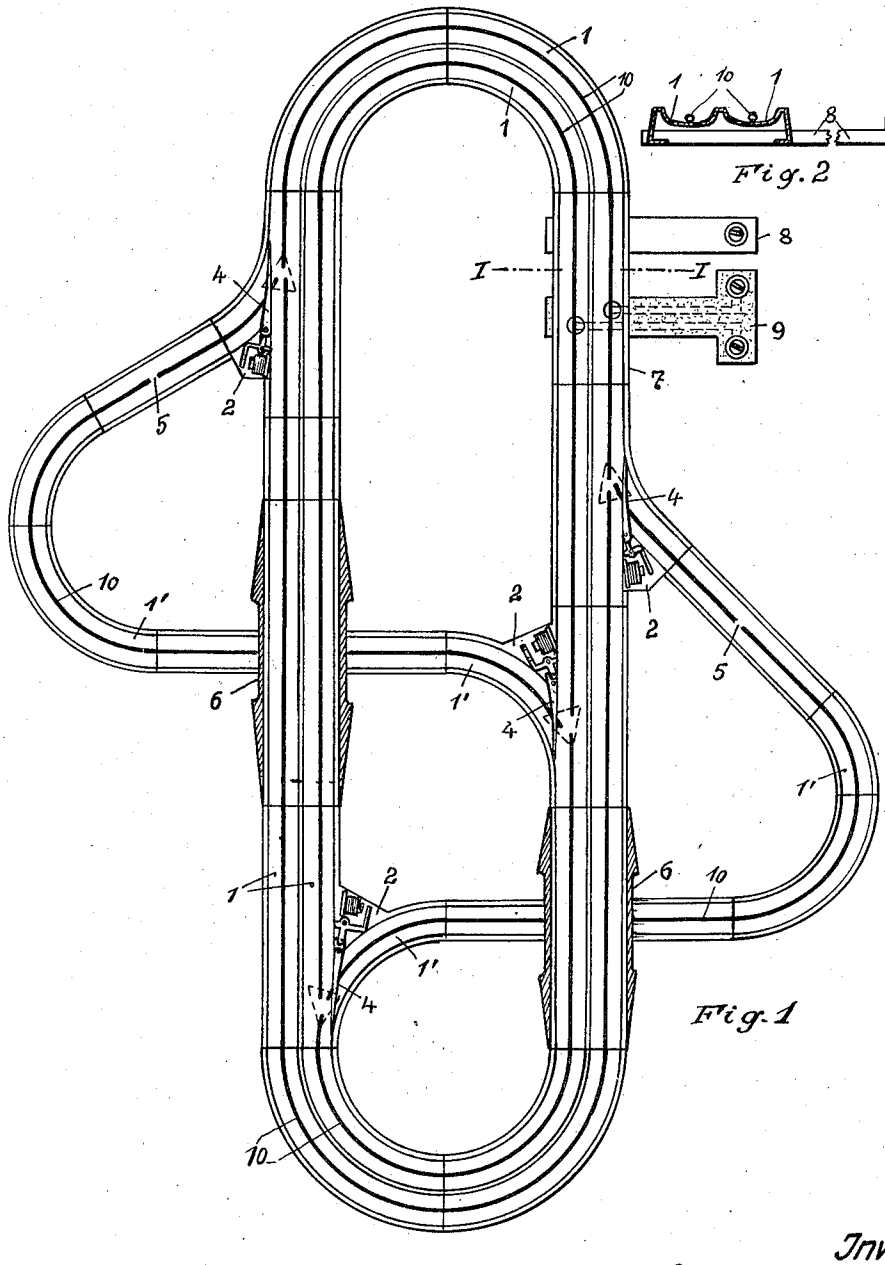


Fig. 2

Fig. 1

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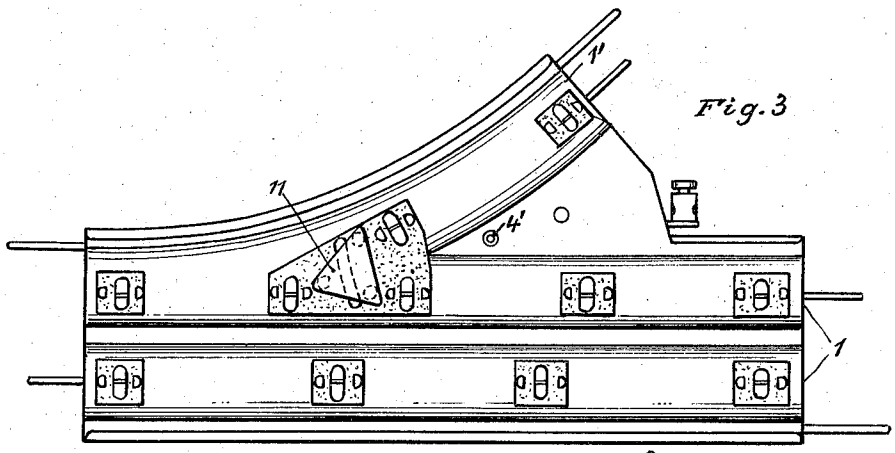


Fig. 3

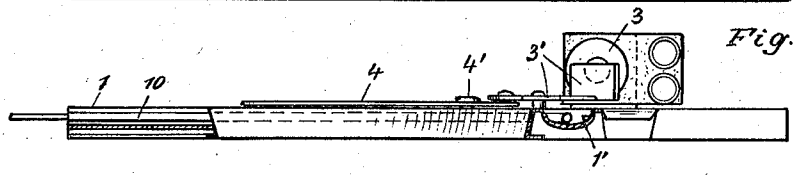


Fig. 4

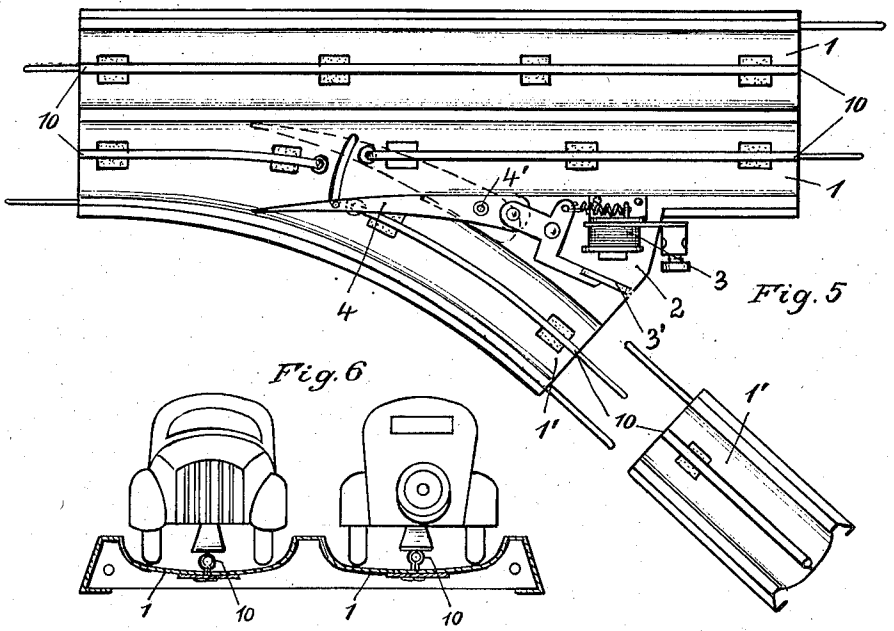


Fig. 5

Fig. 6

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UNITED STATES PATENT OFFICE

2,128,821

SWITCH FOR DOUBLE TRACKS FOR TOY VEHICLES

Ernst Horn, Nuremberg, Germany

Application January 14, 1937, Serial No. 120,575
In Germany February 7, 1936

1 Claim. (Cl. 104—130)

This invention relates to a special construction of a switch which may be used in connection with double tracks for electrically operated toy vehicles, such as toy automobiles, travelling thereon without the use of rails, that is, on wheels without flanges.

My invention consists essentially therein that the tongue of said switch is constructed to operate as a blocking ledge for one or both of said tracks and is associated with a double-armed operating lever forming the armature of an electro-magnet, which when energized by way of a proper contact device effects reversal of said switch-tongue. According to my invention, furthermore, said switch-tongue is positioned at such a height above the switch body, that the path of motion of said tongue is above the current supply rails which are fastened to and insulated from the two tracks which are likewise provided in the body of said switch. A further feature of my invention consists therein that the pivot-point of said switch-tongue and the operating members serving for the operation thereof are both mounted on the body of said switch.

Owing to this construction the switch may be electrically operated in such a manner that it will act as a support for all of its operating members and that it may easily be constructed for insertion into the ring-shaped track which forms part of a double track adapted for the electrical operation of toy vehicles travelling thereon.

In the accompanying drawings I have represented an example of a construction of my novel electrically operated switch.

In the drawings, Fig. 1 is a top-view showing in a diagrammatic way the scheme of arrangement of a double track together with the novel switches inserted thereinto according to my invention, Fig. 2 is an enlarged cross-section through the profile of the double track along line II—II of Fig. 1, said cross-section showing in particular the two individual tracks arranged adjacent each other, Fig. 3 is a still further enlarged bottom-view of my novel switch and the mode of inserting the same into said double track at the points where the side-tracks branch off from the former, Fig. 4 is a side-view of Fig. 3, Fig. 5 is a top-view of Fig. 3, and Fig. 6 is a further enlarged cross-section through the profile of the double track, two toy automobiles being further indicated in Fig. 6, said toy automobiles travelling on wheels without flanges on either track and being electrically driven by way of a sliding contact provided underneath the toy automobiles.

The double track which is closed in the manner of a ring is composed of several double track members 1 which may be joined with each other to form two individual tracks which are formed by proper depressions in the track-members side-by-side, said individual tracks being separated from each other by a strap extending in elevated position therebetween. In order to provide side-tracks 1' branching off the main tracks, switches 2 are inserted into the respective track members forming the main or double tracks, said switches being provided each with a swingable tongue 4 and with an insulated current supply rail 10, the latter the same as either main track 1. The two main tracks 1 are conductively connected to each other and to the track-body as a whole by way of a contact-member 8, while the current supply rails 10 for tracks 1 are insulated from each other and separately connected by means of insulated contacts on member 9 to a current source. The side-tracks 1' may cross the main tracks 1 by means of underbridges 6 inserted into the main tracks, while the current supply rails 10 for said side-tracks 1' are provided with insulating means 5. This affords protection against interference between the operating circuits for the two main tracks, which circuits may have different operating voltages.

Said switches 2 are inserted into the main tracks 1 at the places where the side-tracks branch off and are each equipped with a switch-tongue 4, as may be seen particularly from Fig. 5, said switch tongue being adapted to be swung across the track 1 and locked at any time to form a barrier for the latter. The switch-tongue 4, moreover, is fastened swingably about the pivot 4' to the body of the switch and co-operates with a double-armed operating lever 3' likewise mounted swingably on said body. Said operating lever 3' is constructed at its free end to form an armature for an electro-magnet with the coil 3, said magnet and coil being likewise mounted on said body. By means of a spring as shown in Fig. 5 the lever carrying the armature 3' is kept normally in an inoperative position, that is in a position in which the switch is open by having the switch-tongue 4 in straight or full line position with respect to the respective main track 1. In this way the main track 1 will be free for the passage of a toy-automobile, while the side-track 1' is blocked.

The switch-tongue 4, moreover, is positioned according to my invention at such a height above the switch-body, that the path of motion of said tongue 4 is above the current supply rails 10

which are fastened to both tracks of the switch and insulated from each other.

At the branching-off and crossing points the current supply rails 10 are interrupted at the upper side of the track and are bent downward through the switch body to the underside thereof where they are all conductively connected by means of a bridge-member 11 mounted on an insulating plate as shown in Fig. 3.

If now the magnet coil 3 is energized by a current impulse from a current source by way of terminals provided laterally on said coil, the armature 3' will be attracted, with the result that the lever carrying said armature will move the switch-tongue 4 into the position shown in dotted lines in Fig. 5, thus blocking the main track 1 and opening the side-track 1' for the passage of a toy vehicle from said main track into said side-track or vice versa. The operating members for the switch are mounted on the body of the latter, thus permitting, in addition to the electrical operation of the toy-vehicles on the several tracks, also the electrical operation of the switch.

I claim:

In an endless and rail-less double track for toy electrically operated vehicles, including a switch section insertable in said track for permitting the transfer of a vehicle from one track to the other, means for supplying electricity to said vehicles, said switch section having a main track portion and a spur track portion intersecting said main track portion, a switch tongue pivotally mounted intermediate its ends on said section adjacent the intersection of said portions, one end of said tongue being swingable to block completely either of said intersecting portions: a three-armed lever pivotally mounted on said section adjacent the other end of said tongue, one end of one arm of said lever providing an armature, an electro-magnet carried by said section adjacent said armature and adapted to attract the same when energized, a second arm of said lever extending at right angles to said first arm from the other end thereof, a spring secured to the free end of said second arm of said lever and operable to resist the attraction of said armature to said magnet, a third arm rigidly carried by said second arm intermediate its ends and at right angles thereto, the free end of said last named arm being pivotally secured to the other end of said tongue whereby movement of said L-shaped lever is transmitted to said tongue to swing the first named end of the latter across one or the other of said portions.

ERNST HORN.