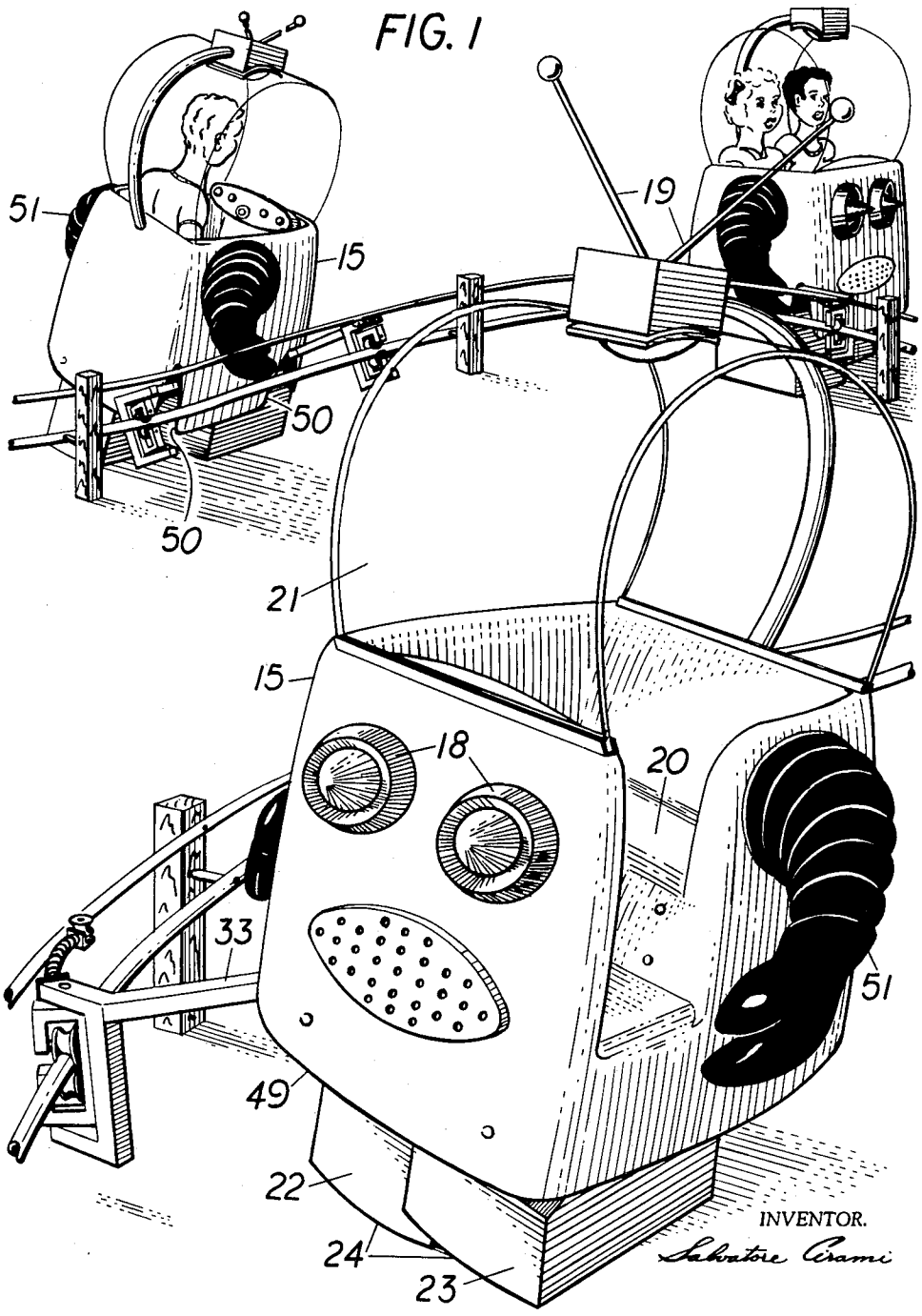
April 16, 1963 S. CIRAMI 3,085,516

WALKING ROUNDABOUT

Original Filed Oct. 21, 1958 8 Sheets-Sheet 1

FIG. 1



INVENTOR.

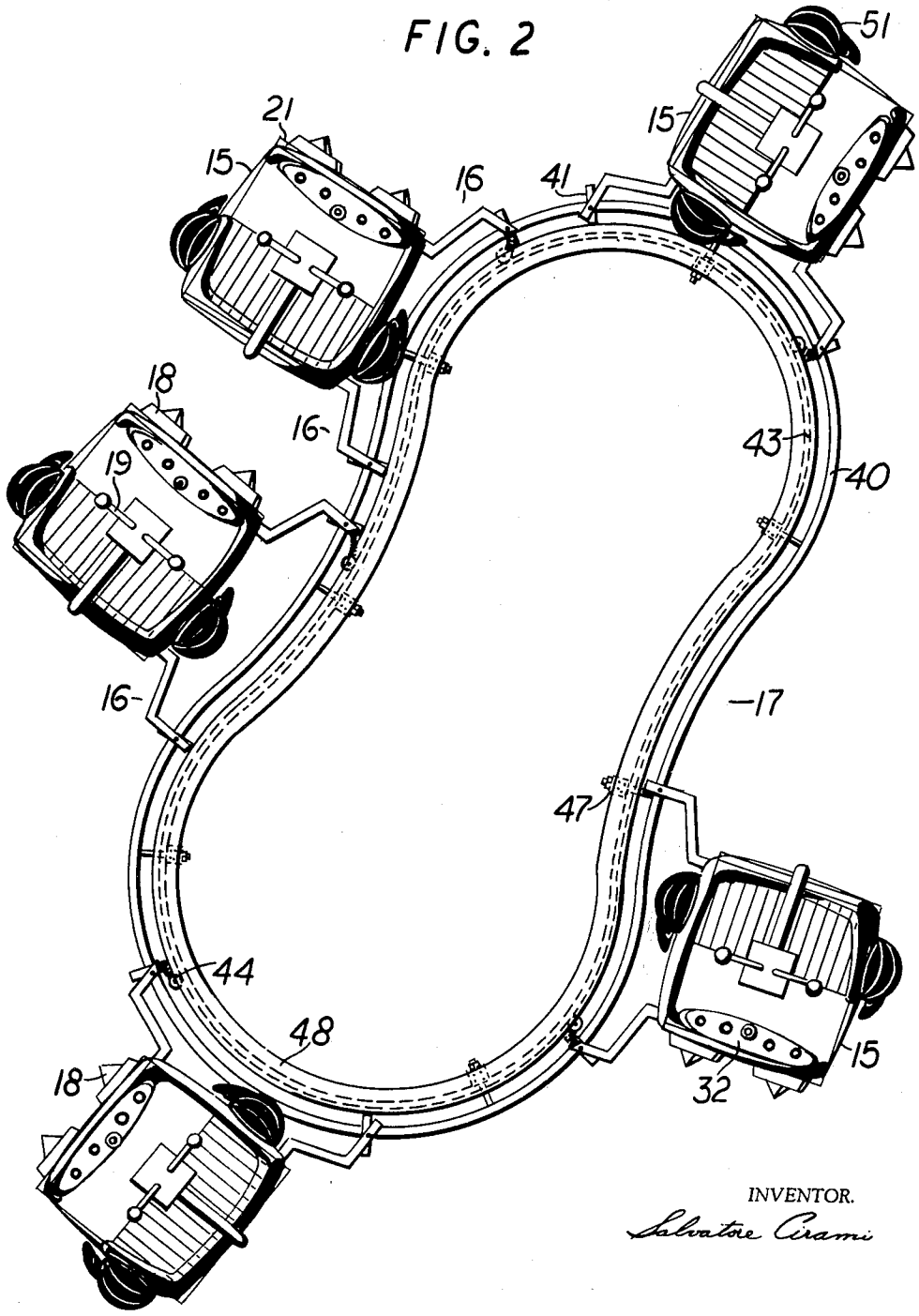
Salvatore Cirami

April 16, 1963 S. CIRAMI 3,085,516

WALKING ROUNDABOUT

Original Filed Oct. 21, 1958 8 Sheets-Sheet 2

FIG. 2



INVENTOR.

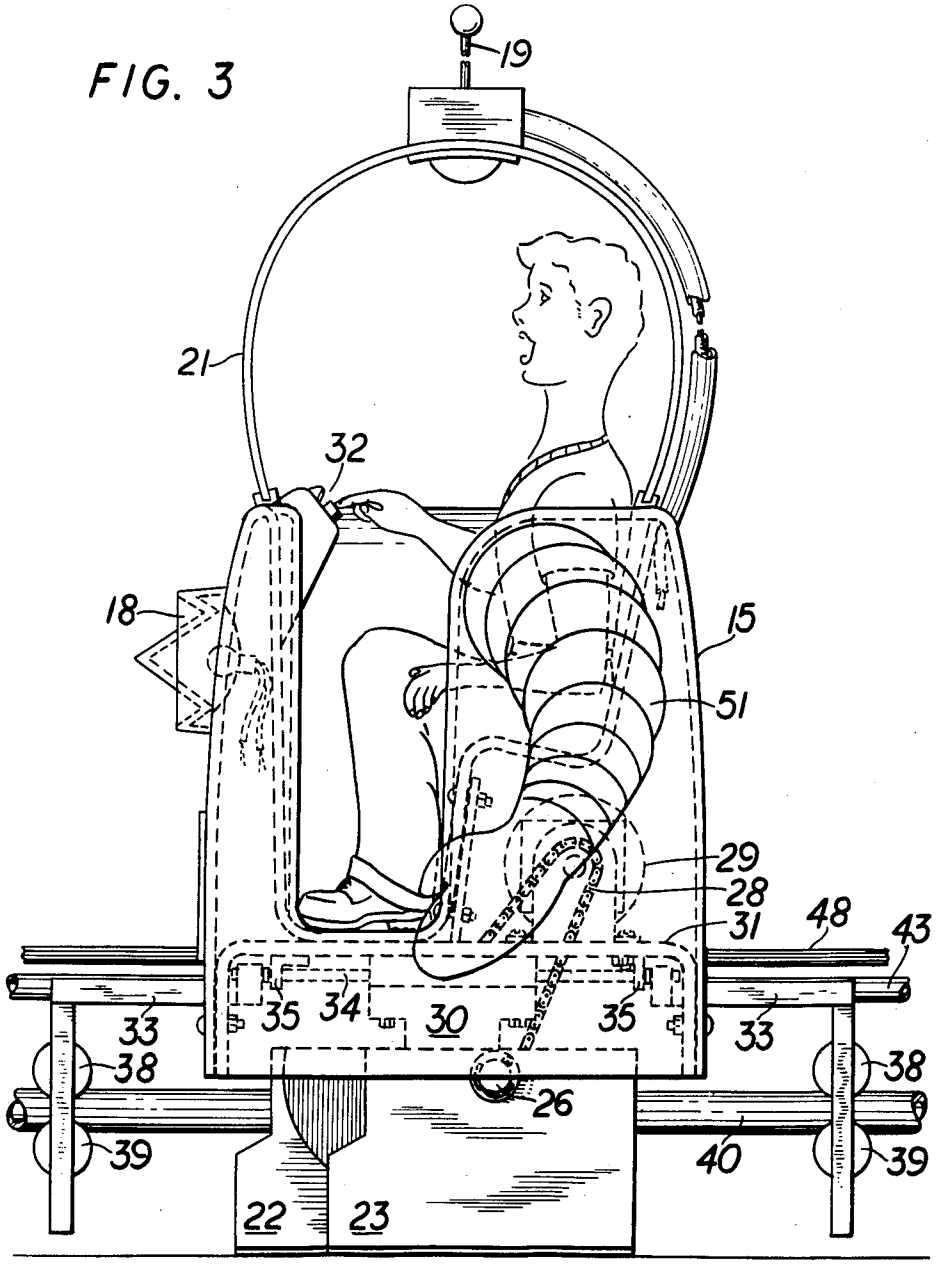
Salvatore Cirami

April 16, 1963 S. CIRAMI 3,085,516

WALKING ROUNDABOUT

Original Filed Oct. 21, 1958 8 Sheets-Sheet 3

FIG. 3



INVENTOR.

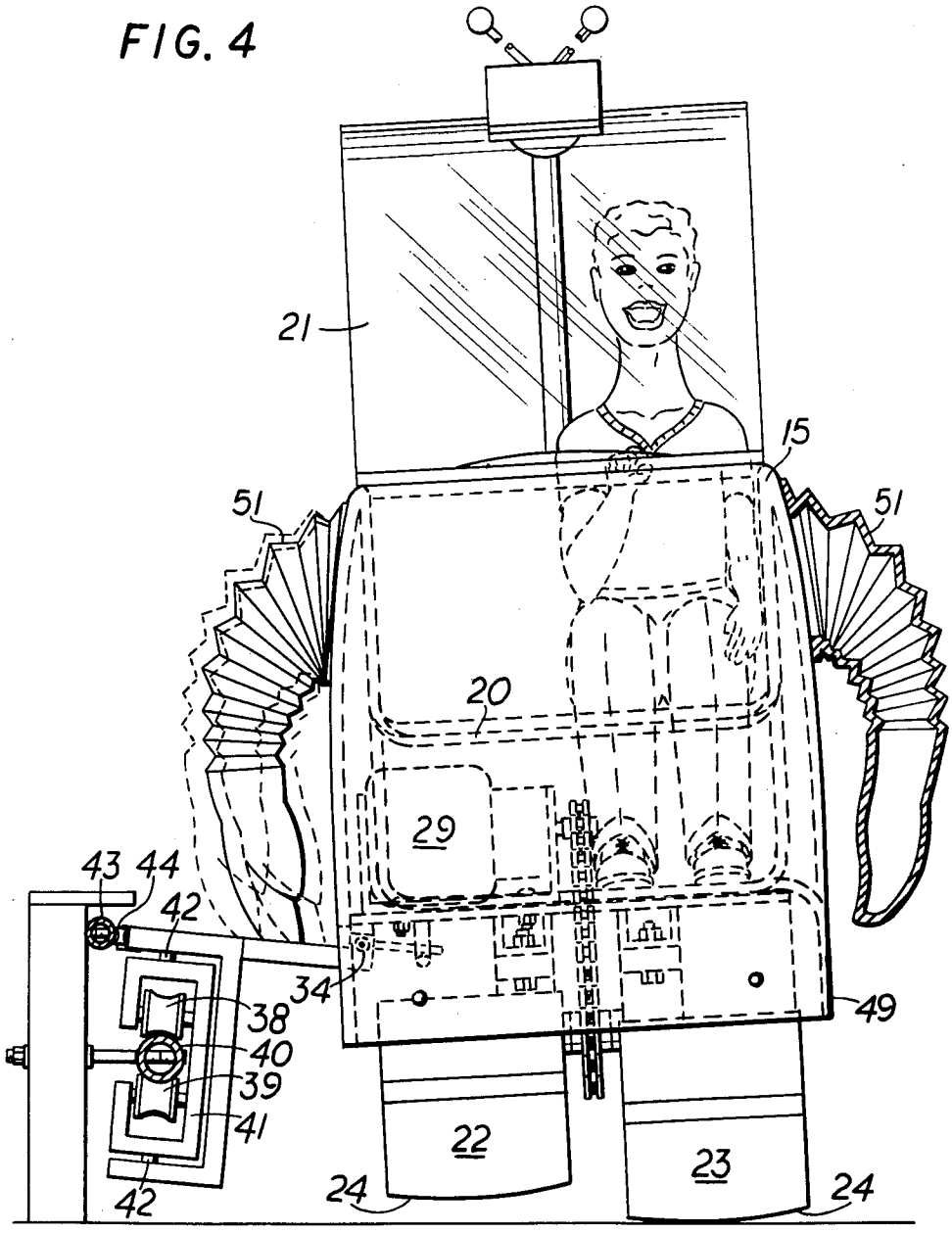
Salvatore Cirami

April 16, 1963 S. CIRAMI 3,085,516

WALKING ROUNDABOUT

Original Filed Oct. 21, 1958 8 Sheets-Sheet 4

FIG. 4



INVENTOR.

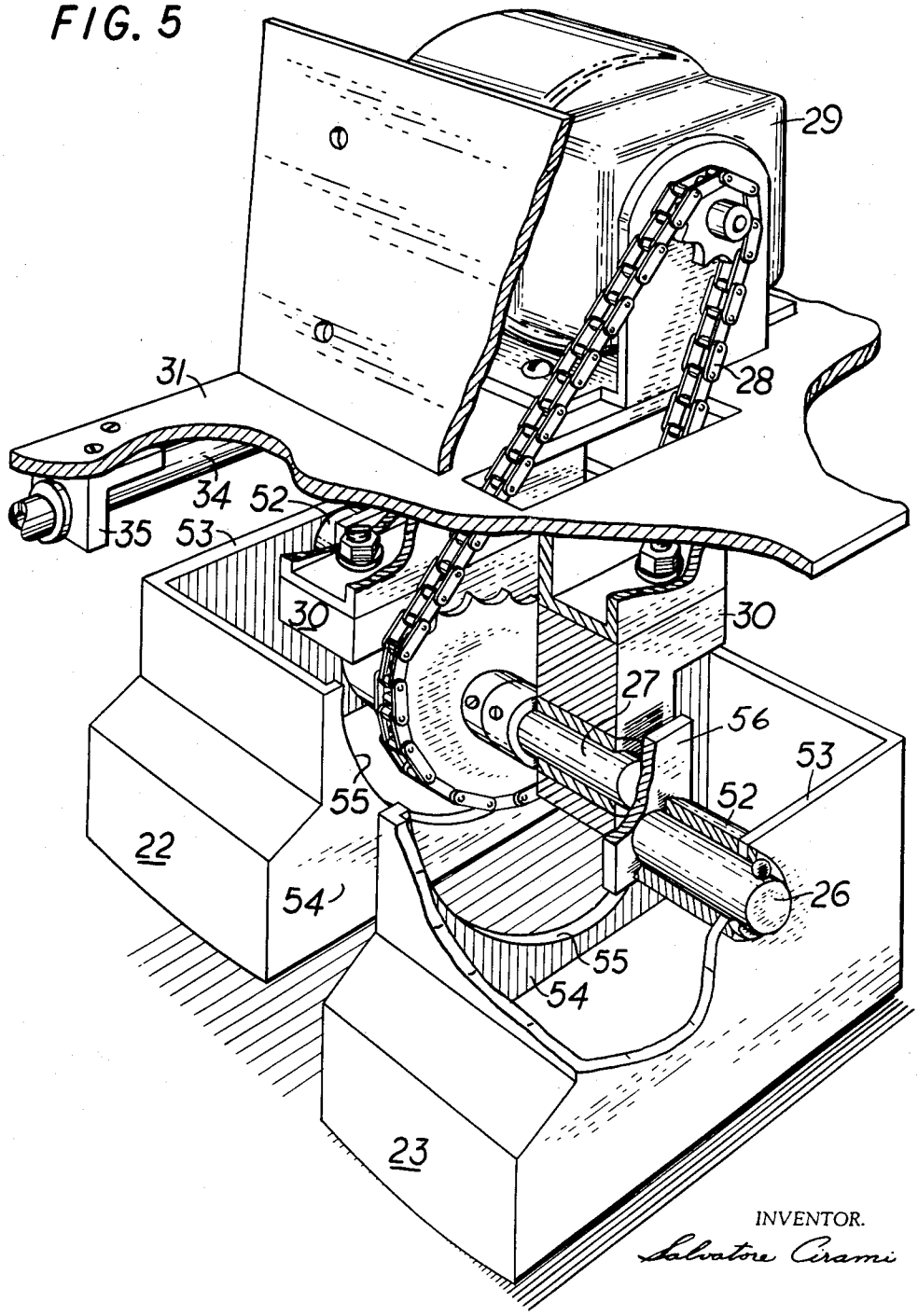
Salvatore Cirami

April 16, 1963 S. CIRAMI 3,085,516

WALKING ROUNDABOUT

Original Filed Oct. 21, 1958 8 Sheets-Sheet 5

FIG. 5



INVENTOR.
Salvatore Cirami

April 16, 1963 S. CIRAMI 3,085,516

WALKING ROUNDABOUT

Original Filed Oct. 21, 1958 8 Sheets-Sheet 6

FIG. 6

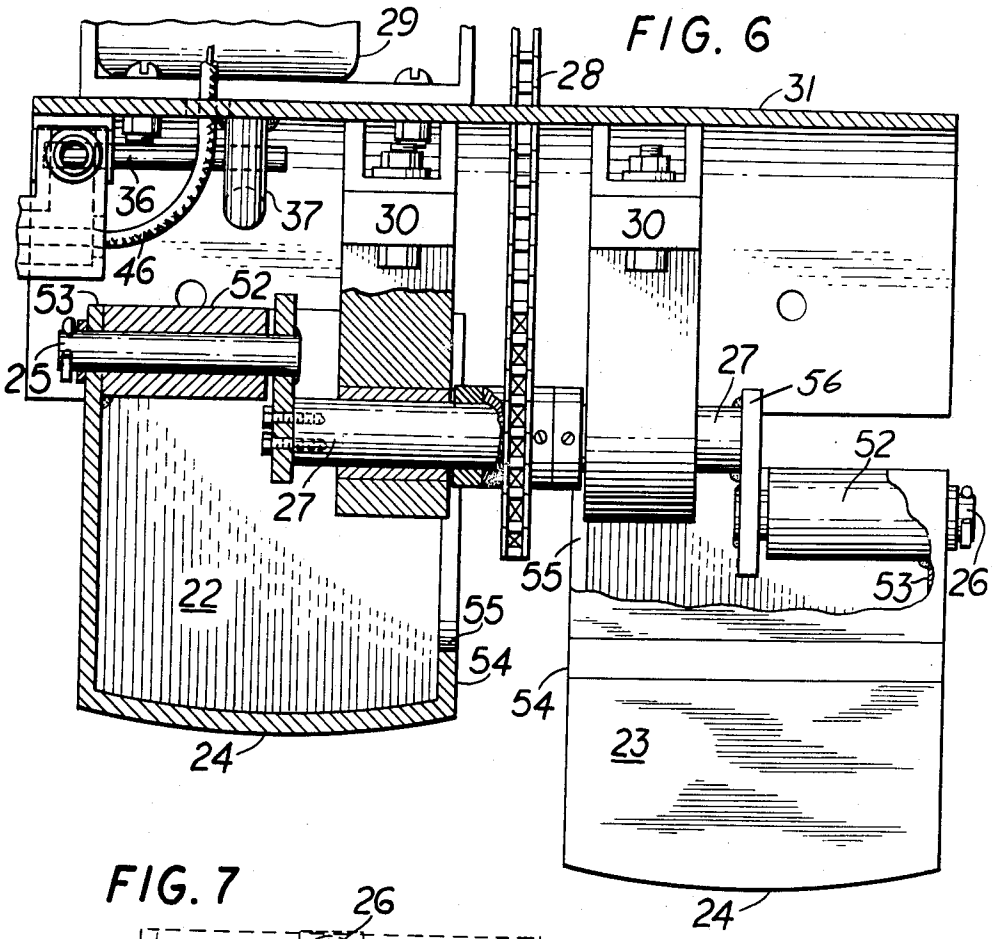
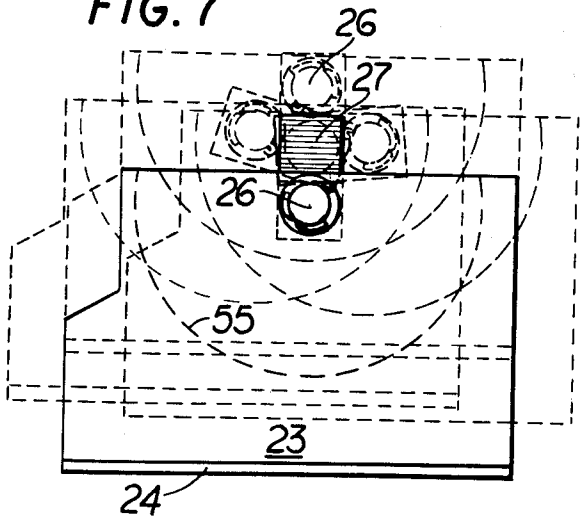


FIG. 7



INVENTOR.
Salvatore Cirami

April 16, 1963 S. CIRAMI 3,085,516

WALKING ROUNDABOUT

Original Filed Oct. 21, 1958 8 Sheets-Sheet 7

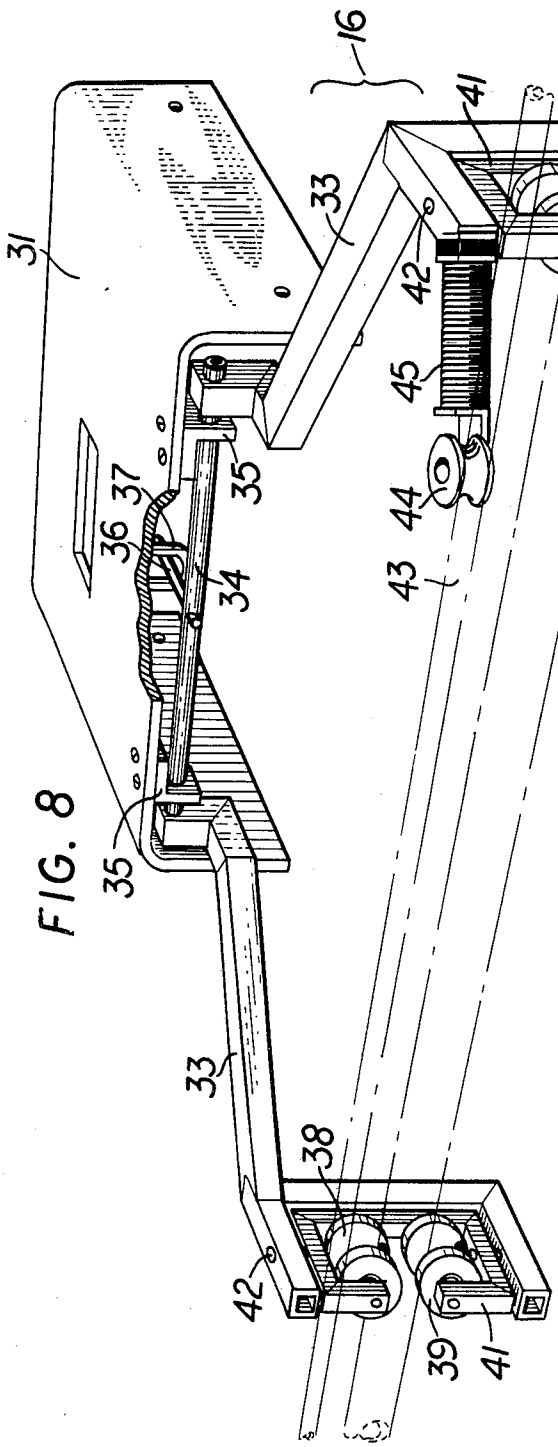


FIG. 8

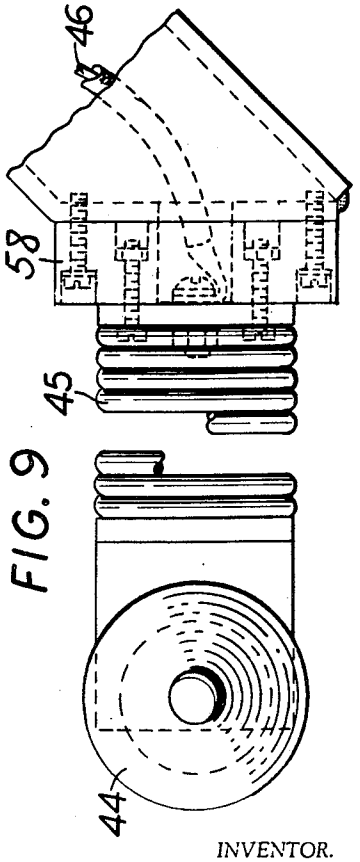


FIG. 9

INVENTOR.

Salvatore Cirami

April 16, 1963 S. CIRAMI 3,085,516

WALKING ROUNDABOUT

Original Filed Oct. 21, 1958 8 Sheets-Sheet 8

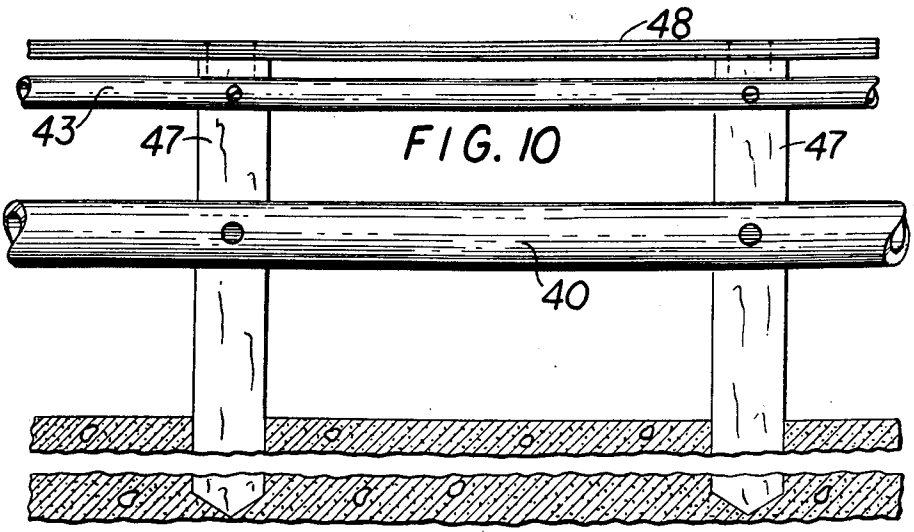


FIG. 10

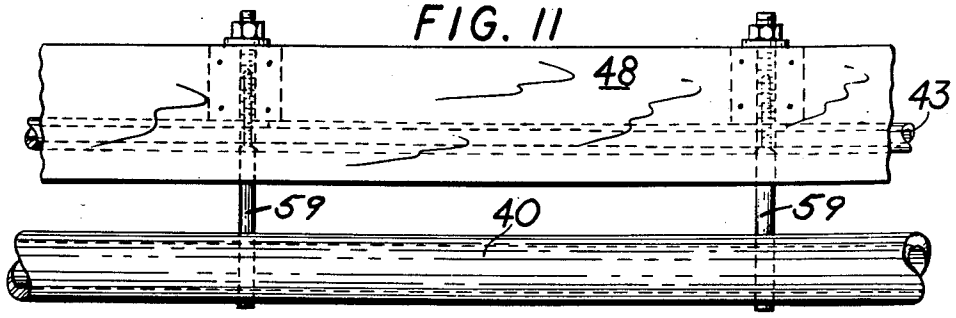


FIG. 11

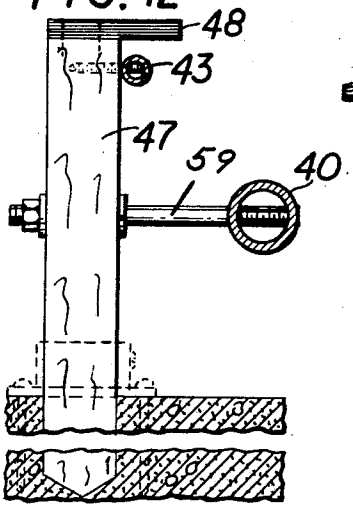


FIG. 12

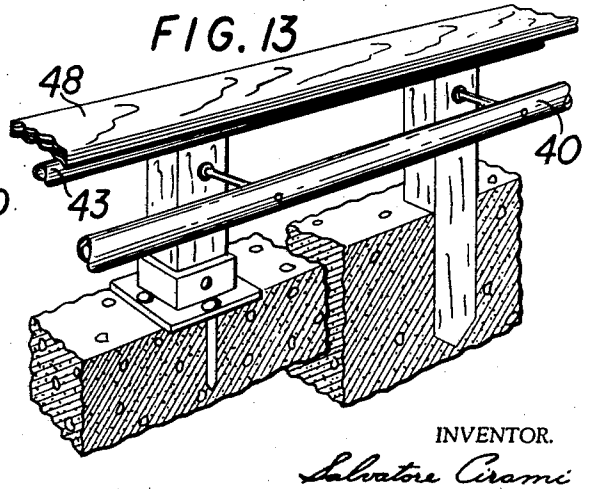


FIG. 13

INVENTOR.

Salvatore Cirami

United States Patent Office 3,085,516 Patented Apr. 16, 1963

3,085,516

WALKING ROUNDABOUT

Salvatore Cirami, 75—36 Parsons Blvd., Flushing 67, N.Y.

Original application Oct. 21, 1958, Ser. No. 768,793. Divided and this application Dec. 7, 1959, Ser. No. 859,550

3 Claims. (Cl. 104—247)

This invention relates to amusement rides, and more particularly to an amusement ride in which a passenger carrying walking figure is employed to transport passengers around a closed loop of trackway as a means of displacing passengers for their merriment and to create an entertaining illusion for the benefit of both riders and onlookers.

The object of the invention is to provide a roundabout in which a plurality of walking figures are separately coupled along a common guide rail that is supported at an elevation alongside a course on which the figures travel; and each figure is provided with its own motor so that it can walk alongside the guide rail independently of all the others.

This disclosure is a division of Robot Amusement Ride, application Serial Number 768,793 filed October 21, 1958; and serves to claim the stepping robot in combination with the trackway as originally disclosed there. The present drawings are a duplicate of those of the original application. The trackway illustrated is separately claimed in Trackway and Yoke Arrangement, application Serial Number 859,072 filed December 11, 1959.

FIG. 1 is a perspective view illustrating in a general way the travel of the robots alongside a portion of a trackway guiding and supplying electricity to them.

FIG. 2 is a top plan view of five robots following a simple trackway layout.

FIG. 3 is a side elevation of one robot and related trackway, with parts broken and appearing in section.

FIG. 4 is a front view of the same unit with parts shown in section.

FIG. 5 is a broken part sectional perspective view of the walking mechanism.

FIG. 6 is a front broken sectional view of the same.

FIG. 7 is a side elevation and diagrammatic view illustrating different positions of one foot member.

FIG. 8 is a broken part perspective view showing the yoke structure employed to connect a robot to the trackway.

FIG. 9 is a broken part detail of the spring mounted contact roller assembly that engages an electric current carrying rail of the trackway, and is shown partly in phantom view.

FIGS. 10, 11, 12 and 13 are detail views of the trackway: FIG. 10 being a broken part sectional front elevation, FIG. 11 a broken part sectional top plan, FIG. 12 a cross sectional view and FIG. 13 a broken part sectional perspective view.

Referring to FIGS. 1 and 2 it will be seen that the invention comprises stepping robots of passenger carrying size containing self-propulsion mechanism and linked by yokes 16 to a guiding and power supplying trackway 17 in the form of a closed loop to thereby automatically return outgoing robots to the starting point.

Arms 51; a head (the transparent enclosure 21); antennae 19; eyes (the lamps 18); and a mouth (the decoration under the eyes); coact to make the open top passenger compartment 15 look like the torso of a robot, FIGS. 2 and 3.

In FIGS. 5 and 6 a rotatable crankshaft (comprising a main shaft 27 with a perpendicular offset 56 at each end in opposed throw, and minor shafts 25, 26 supported by the offsets and parallel with the main shaft) is journaled

in spaced apart bearings 30 fixed to and depending from the underside of the floor 31.

A geared down electric motor 29, FIG. 5 is mounted on top of the floor 31 (equivalent to the space under the seat) and is provided with power transmission means 28 extending through a slot in the floor to connect the motor to the portion of the main shaft exposed between the bearings 30.

Foot members 22, 23 in the form of low, hollow, open-top boxes with a large cutout 55 in their inboard wall 54 are provided with a bearing 52 fixed to the outboard wall 53. The cutouts and open tops permit the bearings 30 and crankshaft assembly to set down into the boxes. By containing the actuating elements within them, the foot members make a major contribution to low vehicular height. This hollow box feature, by concealing the drive means, enhances the machine's usefulness in amusement ride applications by creating wonderment as to the vehicle's motivation. It also protects operating parts from ground dust raised by the foot members pounding on terrain dried by summer heat.

The bearings 52 are designed to retain the minor shafts, being so positioned that each box will hang in balanced dependence from its respective minor shaft. This relationship is shown in FIG. 7 where one foot member or box is shown in some of the positions through which it will pass in each revolution of the crankshaft. The bearings 52 are positioned high enough above the base of the box so that the offset will clear the base when the foot is in the uplifted position. Because the foot member is free to pivot around the minor shaft, the underside of the base 24 remains level as the crankshaft rotates.

In operation rotation of the crankshaft by the motor causes the foot members 22, 23 to be alternately lifted, advanced, lowered and returned in a plane perpendicular to the axis of the main shaft 27. In this way, each foot member in turn supports and advances the vehicle a distance equal to twice the throw of the actuating minor shaft 26.

The passenger compartment 15 is provided with a seat 20, FIG. 1, positioned rearward in said compartment and so constructed and arranged as to provide a space under the seat suitable to house a motor 29, FIG. 3.

The numeral 31, FIG. 3 indicates a structure serving to support the compartment 15 above, and a stepper below. Because the floor of the compartment rests directly upon the support 31, it is convenient to refer to 31 as the floor of the passenger compartment.

The walls of the compartment depend below the level of the floor 31 far enough to conceal from general view the means employed to move the foot members 22, 23, FIG. 3; which are arranged fixed to and depending from the underside of the support or floor 31.

The yokes 16, FIG. 2 are secured to one side of the compartment 15, and the actual point of connection, in this embodiment, is at the underside of the support or floor 31. This relationship is best seen in FIG. 8, where the floor or support structure 31 is shown enlarged.

Since the walls of the passenger compartment depend—as indicated by 49, FIGS. 1, 4—below the level of the floor, and the yoke arms 33 project laterally from the underside of the floor; it is necessary to provide openings at 50, FIG. 1 to pass the yoke arms.

The yokes 16, FIG. 2 link the robots to a guide rail 40, which it can be seen in FIGS. 3, 4 is carried at an elevation above the ground or level plane upon which the robot stands.

Each yoke comprises a pair of arms 33, FIG. 8, rigidly held—by a closed side 34—in fixed spaced apart relation in a horizontal plane. The arms 33 are provided rigidly fixed to the closed side 34.

It is desirable that the yoke be pivotally connected to the rider support or floor **31** in such arrangement that the rider support, or the compartment attached on the floor **31** will be permitted a limited degree of freedom to lean toward and away from the guide rail **40**. To accomplish this, the closed side **34** of the yoke is provided in the form of a shaft and is arranged journaled in bearings **35** fixed to and depending from the underside of the floor **31**. The degree to which the compartment can lean is limited by the rod **36** which is fixed to the closed side or shaft **34** and arranged projecting into a confining loop **37**. The end of each yoke arm **33** that is furthest from the end that is fixed to the closed side **34** is termed in the claims a "free end." In FIG. 8, it can be seen that the free end of each yoke arm is provided with means to link the arm to the guide rail; and since a separate such means is provided for each arm, it is clear that the arms are independently linked to the guide rail. This means that the arms will be able to follow horizontal undulations or turns in the guide rail, independently of each other; the significance being that because of this feature the yoke will be able to follow turns of small radius although the arms are spread far enough apart to cause the support **31** to follow turns in the rail efficiently (without turning in towards the rail itself and jamming against it).

Each means to independently link the free end of a yoke arm **33** to the guide rail **40** comprises a pair of rollers **38**, **39** disposed to roll around separate horizontal axes, said axes lying parallel to each other and spaced apart in the same vertical plane. The rollers are provided with a concave periphery to correspond with the guide rail which is provided with a circular cross-section, as shown best in FIG. 12. The rollers are arranged one above and one below the guide rail so as to confine the guide rail between them. Means to hold the rollers in the described relationship relative to each other and relative to the guide rail are provided in the form of a C-shaped rack **41** pivotally connected to the free end of the yoke arm in such arrangement that the rack—and therefore the rollers—swivels around a vertical axis. In the embodiment illustrated, this is achieved by mounting the rack in a C-shaped frame **57** in such arrangement that the rack **41** swivels around the pin **42** passing through the upper horizontal arms of both C-shaped structures. A similar pin is provided to connect the lower horizontal arms of the C-shaped structures. The pin **42** is positioned such that the rollers swivel around a vertical axis that perpendicularly intersects the horizontal axis of each roller and passes through the center of a circular cross-section of the guide rail taken in the vertical plane in which said horizontal axes are disposed.

The trackway includes a power rail **43**, FIG. 8, to carry electric current for the robot's motor and the decorative lamps **18**. A pickup for the current is provided in the form of a roller **44** yieldingly carried by a spring **45** and connected by wiring **46** (see FIG. 9, where the pickup is shown enlarged) passed through the inside of the yoke arm—which is provided hollow—and connected to the motor installed on the floor **31**, and connected to the lamps installed on the compartment which is arranged attached on the floor or support **31**. The insulating block **58** electrically isolates the roller **44** and spring **45** from the yoke arm; and the screws that connect the block **58** to the spring and yoke structure are shown in phantom view to reveal the method of attachment and also to show how the wiring **46** is connected to the spring **45**, FIG. 9.

Turning to FIGS. 10–13, the trackway comprises a guide rail **40** carried at an elevation by spaced apart posts **47**, and held apart from the posts by a laterally projecting support **59**. The power rail **43** is arranged above the guide rail and is covered by an overhanging shield **48**. FIG. 13 suggests alternate methods of securing the posts to the ground, the choice depending on whether the installation is permanent on concrete at the left, or temporary in earth at the right.

To dramatize the walking feature of the robots, I put them in direct contact with the course, which may be the ground itself or gravel or sand, etc., and control their direction of travel with the trackway standing to one side, where it may be made as inconspicuous as possible with camouflage.

In practice, a number of robots or other figures are operated on the same trackway, one following the other; the number of vehicles and therefore the capacity of the ride limited only by the length of trackway in use, and additional merriment created by including hills and valleys or other obstacles or experiences in the course.

I claim:

1. In a walking roundabout of the type where a human passenger is transported on a stepping rider support that is provided with a pair of foot members, where means are provided to alternately lift, advance, lower and return said foot members, said means so constructed and arranged as to support the weight of said rider support on said foot members, and where said rider support is provided with a motor that is connected to drive said means; in combination with said rider support:

a guide rail arranged in a closed loop and provided with means to support the rail at an elevation alongside a course paralleling said guide rail;

a yoke comprising a pair of arms having free ends rigidly held—by a closed side—in fixed spaced apart relation in a horizontal plane;

means to independently link the free end of each yoke arm to said guide rail in riding engagement with same, said means so constructed and arranged that each yoke arm is required to follow horizontal turns in the guide rail, and the said closed side of the yoke projects away from the guide rail and towards said course;

means to provide a yielding relationship between the free end of each yoke arm and said guide rail such that the closed side of the yoke has a degree of freedom to move around the longitudinal axis of the guide rail, sufficient to assure the rider support traction on said course when the rider support is arranged secured to the closed side of the yoke;

said closed side of the yoke provided secured to one side of said rider support in such arrangement that said yoke is carried along the rail by the progress of the rider support on said course, and the rider support is confined to walking alongside the guide rail and is required to follow the rail through turns;

said closed side of the yoke provided pivotally connected to said rider support along a horizontal axis in such arrangement that the rider support is permitted a limited degree of freedom to lean toward and away from said guide rail as a result of the lifting and lowering of said foot members, sufficient to impart a rolling displacement to said rider support, but not enough to permit the rider support to fall on its side.

2. In a walking-robot roundabout:

a stepping robot adapted to the carriage of one or more passengers for their merriment and the entertainment of onlookers, comprising:

a torso in the form of an open top passenger compartment having a floor and provided with walls arranged upright and immediately encircling passengers in such manner as to confine and restrict their movement in said compartment, said walls proportioned reaching no higher than shoulder height of said passengers;

a head in the form of an enclosure attached on top of said compartment, constructed large enough to encompass the head and shoulders of said passangers and so constructed and arranged as to provide visibility for said passengers and ventilation of said compartment;

arms attached on said compartment;

a single pair of foot members, said foot members located depending and spaced apart from the underside of said floor a distance adequate to provide passing clearance between the top of said foot members and the underside of said floor;

means to alternately lift, advance, lower and return said foot members, said means located under said floor and fixed to said compartment, and so constructed and arranged as to support the weight of said compartment on said foot members;

a motor connected to drive said means;

the combination so constructed and arranged as to provide a passenger carrying robot having a space inside its head contiguous with a space inside its torso suitable for occupancy by passengers, and so proportioned that said passengers can occupy the space at the conjunction of the head and torso with sufficient freedom to turn about in the act of waving and shouting to onlookers, although the robot is provided with a compact torso and is scaled such that they must occupy both the head and torso simultaneously;

the combination so constructed and arranged that the lifting, advancing, lowering and returning of said foot members by said means displaces the compartment for the merriment of its occupants and to create for the entertainment of onlookers the illusion of a walking robot;

in combination with:

a guide rail arranged in a closed loop and provided with means to support the rail at an elevation alongside a course paralleling said guide rail;

a yoke comprising a pair of arms having free ends rigidly held—by a closed side—in fixed apart relation in a horizontal plane;

means to independently link the free end of each yoke arm to said guide rail in riding engagement with same, said means so constructed and arranged that each yoke arm is required to follow horizontal turns in the guide rail, and the said closed side of the yoke projects away from the guide rail and towards said course;

means to provide a yielding relationship between the free end of each yoke arm and said guide rail such that the closed side of the yoke has a degree of freedom to move around the longitudinal axis of the guide rail, sufficient to assure the robot traction on said course when the robot is arranged secured to the closed side of the yoke;

said closed side of the yoke provided secured to one side of said compartment in such arrangement that said yoke is carried along the rail by the progress of the robot on said course, and the robot is confined to walking alongside the guide rail and is required to follow the rail through turns;

said closed side of the yoke provided pivotally connected to said compartment along a horizontal axis in such arrangement that the robot is permitted a limited degree of freedom to lean toward and away from said guide rail as a result of the lifting and lowering of said foot members, sufficient to impart a rolling displacement to said compartment, but not enough to permit the robot to fall on its side.

3. In a walking-robot roundabout:

a stepping robot adapted to the carriage of one or more passengers for their merriment and the entertainment of onlookers, comprising:

a torso in the form of an open top passenger compartment having a floor and provided with walls arranged upright and immediately encircling passengers in such manner as to confine and restrict their movement in said compartment; a single seat, said seat positioned rearward in said compartment and so constructed and arranged as to provide a space under

said seat suitable to house a motor; said walls proportioned reaching no higher than shoulder height of seated passengers;

a head in the form of an enclosure attached on top of said compartment, constructed large enough to encompass the head and shoulders of said passengers and so constructed and arranged as to provide visibility for said passengers and ventilation of said compartment;

said compartment provided with an opening for passenger access, said opening located forward of said seat and extending from the top edge of a wall of the compartment downward toward said floor; said enclosure provided with an opening corresponding with and effectively vertically elongating the opening in the compartment, so arranged as to form in combination with same, a passenger entranceway;

arms attached on said compartment;

a single pair of foot members, said foot members located depending and spaced apart from the underside of said floor a distance adequate to provide passing clearance between the top of said foot members and the underside of said floor;

means to alternately lift, advance, lower and return said foot members, said means located fixed to and depending from the underside of said floor, and so constructed and arranged as to support the weight of said compartment on said foot members;

said foot members proportioned short enough in height —in combination with said means, and measured when both foot members are standing on the same level plane—that a person standing before said entranceway with one foot on said plane, can place his other foot on the compartment floor and lift himself up into said compartment;

a motor located in the space under the seat and connected to drive said means;

the combination so constructed and arranged as to provide a passenger carrying robot having a space inside its head contiguous with a space inside its torso suitable for occupancy by passengers, and so proportioned that said passengers can occupy the space at the conjunction of the head and torso with sufficient freedom to turn about in the act of waving and shouting to onlookers, although the robot is provided with a compact torso and is scaled such that they must occupy both the head and torso simultaneously;

the combination so constructed and arranged that the lifting, advancing, lowering and returning of said foot members by said means displaces the compartment for the merriment of its occupants and to create for the entertainment of onlookers the illusion of a walking robot;

in combination with:

a guide rail arranged in a closed loop and provided with means to support the rail at an elevation alongside a course paralleling said guide rail; said guide rail provided circular in cross-section, said means to support the rail comprising spaced apart posts each provided with a laterally projecting support extending from the post and fixed to the guide rail;

a yoke comprising a pair of arms having free ends rigidly held—by a closed side—in fixed spaced apart relation in a horizontal plane;

each yoke arm provided with a pair of rollers disposed to roll around separate horizontal axes, said axes lying parallel to each other and spaced apart in the same vertical plane; said rollers provided with a concave periphery corresponding with the circular cross-section of said guide rail, and arranged one above and one below the guide rail so as to confine the guide rail between them; means to hold said rollers in the described relationship relative to each other and relative to the guide rail, said means provided pivotally connected to the free end of the yoke arm

in such arrangement that the rollers swivel around a vertical axis that perpendicularly intersects the horizontal axis of each roller and passes through the center of a circular cross-section of the guide rail taken in the vertical plane in which said horizontal axes are disposed;

as seen in the vertical plane in which said circular cross-section is taken, each laterally projecting support proportioned sufficiently narrower than said cross-section as to allow said rollers a degree of freedom to move around the circumference of said cross-section, sufficient to assure the robot traction on said course when the robot is arranged secured to the closed side of the yoke;

said closed side of the yoke provided secured to one side of said compartment in such arrangement that said yoke is carried along the rail by the progress of the robot on said course, and the robot is confined to walking alongside the guide rail and is required to follow the rail through turns;

said closed side of the yoke provided pivotally connected to said compartment along a horizontal axis in such arrangement that the robot is permitted a limited degree of freedom to lean toward and away from said guide rail as a result of the lifting and lowering of said foot members, sufficient to impart a rolling displacement to said compartment, but not enough to permit the robot to fall on its side;

said passenger entranceway located in that side wall—of the compartment—that is furtherest from said guide rail.

References Cited in the file of this patent

UNITED STATES PATENTS

1,729,379	Garcia	Sept. 24, 1929
1,740,496	Cassidy et al.	Dec. 24, 1929
2,036,427	Meler	Apr. 7, 1936