June 9, 1925. 1,541,589

J. ROSSINI

MONORAIL SYSTEM

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FIG. 1.

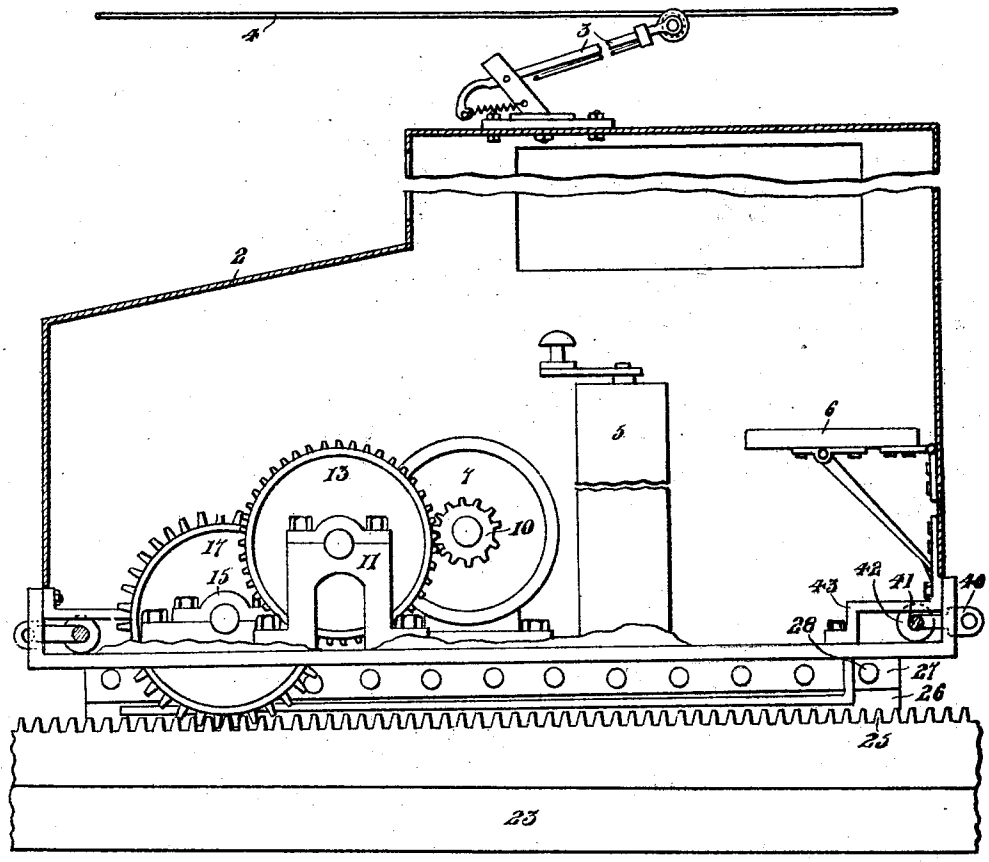
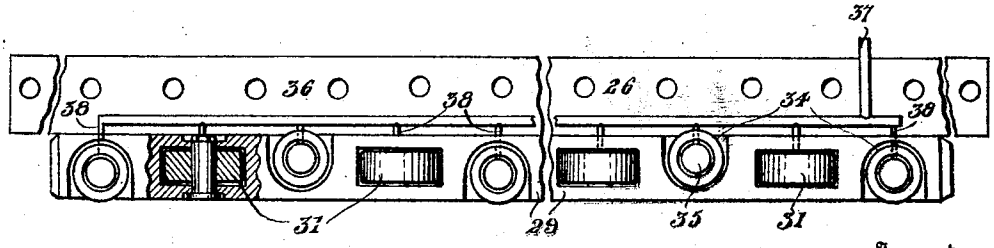


FIG. 2.



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FIG. 4.

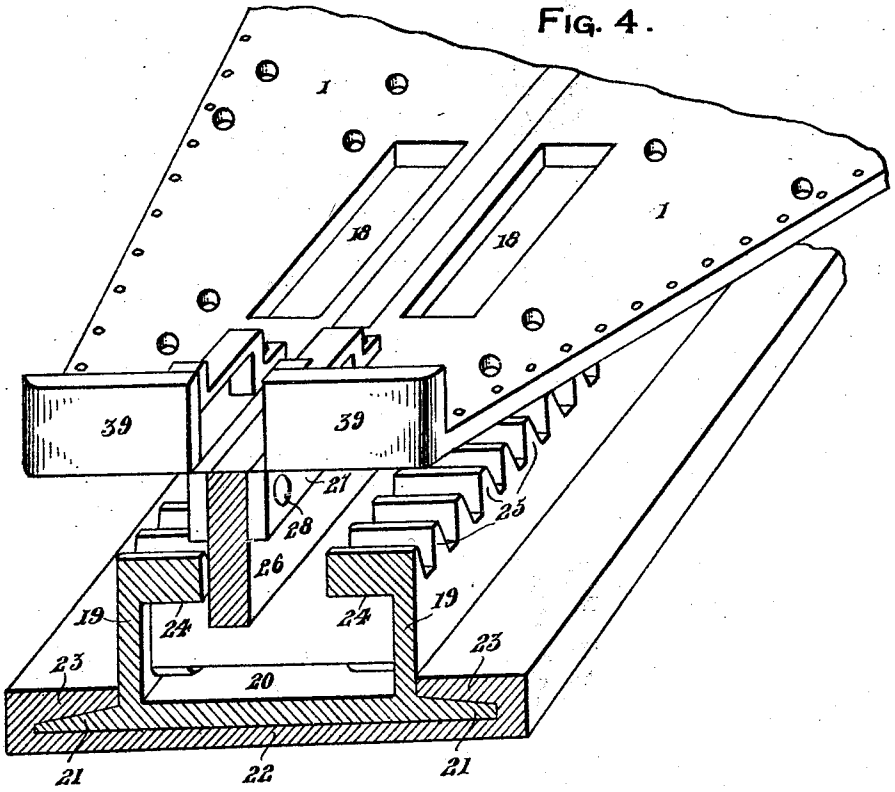


FIG. 3.

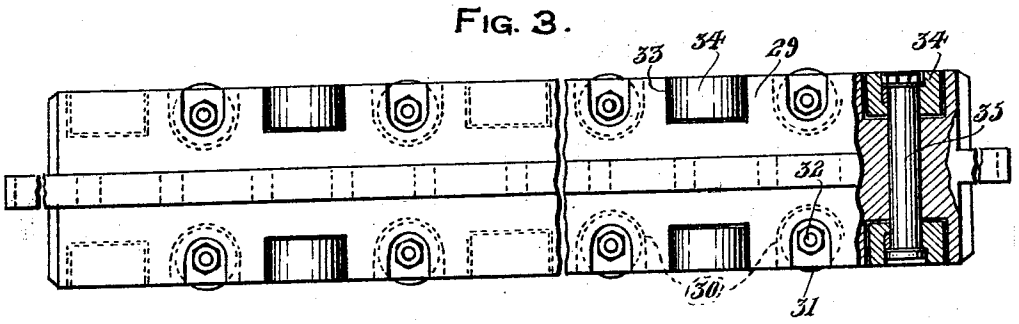
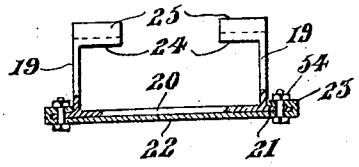


FIG. 5.



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FIG. 7.

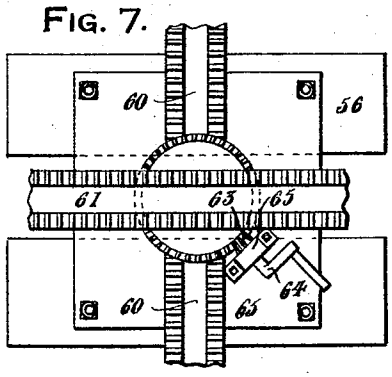


FIG. 8.

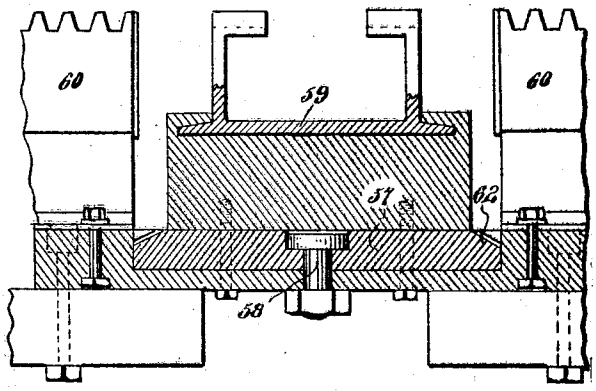


FIG. 6.

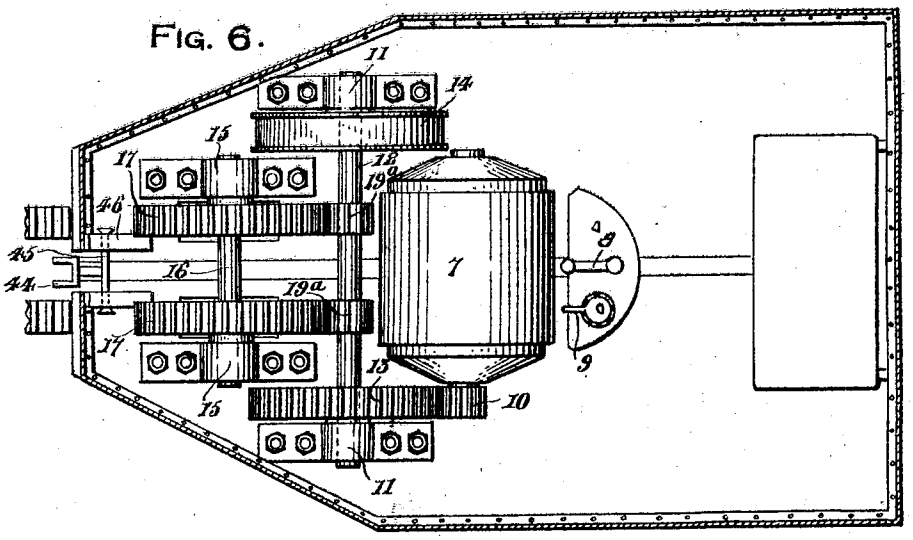
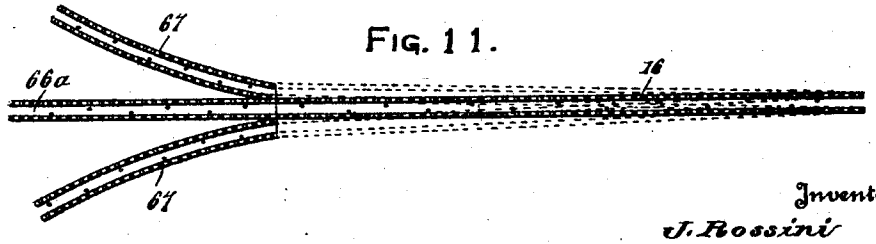


FIG. 11.



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FIG. 10.

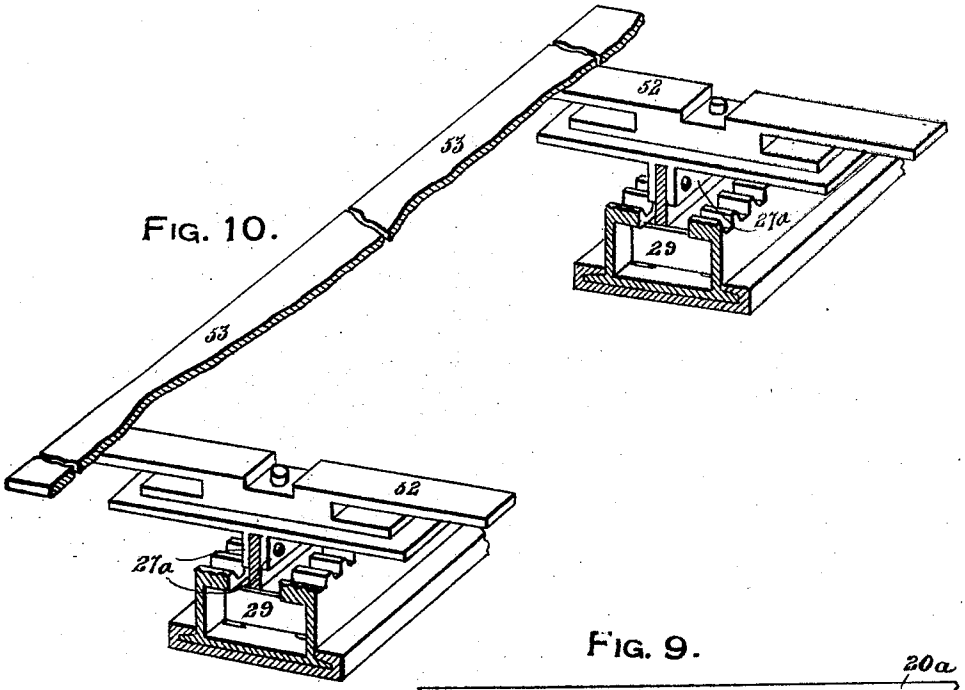
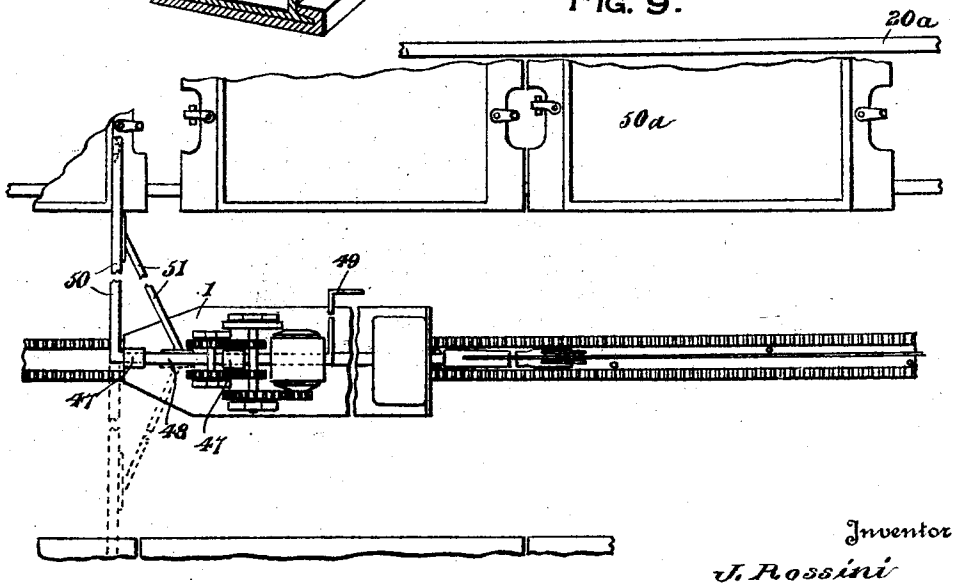


FIG. 9.



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Patented June 9, 1925. 1,541,589

UNITED STATES PATENT OFFICE.

JOSHUA ROSSINI, OF SCRANTON, PENNSYLVANIA.

MONORAIL SYSTEM.

Application filed November 26, 1924. Serial No. 752,385.

To all whom it may concern:

Be it known that I, JOSHUA ROSSINI, a citizen of the United States of America, residing at Scranton, in the county of Lackawanna and State of Pennsylvania, have invented certain new and useful Improvements in Monorail Sytems, of which the following is a specification.

This invention relates to certain new and useful improvements in a mono-rail railway and has for its primary object to provide an economic and safe means of locomotion and capable of use in different connections, such as the propulsion of mine cars, dump cars and conveyances used in building construction and for railways of various types.

Another object of the invention is to provide a mono-rail railway wherein a single rail of channel formation receives a roller carrying block depending from the bottom of the car or the like with the rollers so positioned for contacting all adjacent faces of the channel rail to reduce friction and permit an even operation of the railway. The invention further contemplates a power car in connection with a mono-rail having devices associated therewith and adapted to be laterally shifted relative to the power car for engaging mine cars or trucks on adjacently positioned double tracks to effect rolling movement thereof as desired.

It is a further object of the invention to provide a novel type of mono-rail providing for a switch construction as well as a turn table.

With the above and other objects in view that will become apparent as the nature of the invention is better understood, the same consists of the novel form, combination and arrangement of parts hereinafter more fully described, shown in the accompanying drawings and claimed.

In the drawings, wherein like reference characters designate corresponding parts throughout the several views—

Figure 1 is a vertical longitudinal sectional view of a power car mounted on a mono-rail,

Figure 2 is a side elevational view, partly broken away and shown in section of the roller supporting guide block depending from the power car and positioned within the side walls of the mono rail.

Figure 3 is a top plan view of the guide block, partly shown in section,

Figure 4 is a fragmentary perspective view, partly in section showing the base plate or bottom of the power car, and mono-rail,

Figure 5 is an end elevational view, partly in section of the preferred form of mono-rail,

Figure 6 is a horizontal sectional view thru the power car showing in top plan the power devices and driving members associated with the mono-rail,

Figure 7 is a fragmentary top plan view of a turn table construction,

Figure 8 is a side elevational view, partly in section of the turn table construction illustrated in Fig. 7,

Figure 9 is a top plan view showing the mono-rail and power car located between double tracks with a shiftable arm carried by the power car for engaging the cars upon the opposite tracks for propelling the same.

Figure 10 is a fragmentary perspective view, partly shown in section showing a car supported upon a pair of spaced trucks, and

Figure 11 is a top plan view showing a switch construction of the mono-rail.

The mono-rail railway disclosed in this application embodies a power car having a bottom wall or base platform 1 preferably of the form illustrated in top plan in Figs. 1 and 6 and upon which a housing 2 is mounted, the housing carrying the usual trolley pole 3 that is associated with the electric conductor 4 for establishing communication with the controller 5 upon the platform. The controller box 5 is positioned adjacent the operator's seat 6 that is hingedly supported upon the rear wall of the housing 2.

The power devices within the car are shown more clearly in Figs. 1 and 6 and include a motor 7 controlled in its operation by the controller lever 8 associated with the box 5, the controller lever 8 having the usual lock lever 9 associated therewith while a pinion 10 projects from one end of the motor 7. Bearings 11 supported upon the platform 1 adjacent each side thereof and in proximity of the forward end of the platform supports a journaled shaft 12 that has a gear wheel 13 fixed thereto that meshes with the pinion 10 while the opposite end of the shaft 12 carries a brake drum 14 for arresting movement of the devices thru the medium of the usual braking instrumentalities. A pair of forwardly positioned bearings 15 rotatably support a journaled

shaft 16 and upon which shaft 16 a pair of relatively large gears 17 are secured, the platform 1 being provided with a pair of longitudinally extending openings 18 thru which the gears 17 downwardly extend as shown in Fig. 1, the gears 17 meshing with cooperating pinions 19ª upon the shaft 12 as illustrated in Fig. 6. It will therefore be seen that when the motor 7 is in operation, rotary motion of the shaft of the motor carrying the pinion 10 is transmitted to the gears 17 for purposes presently to appear.

The mono-rail embodies a pair of side walls 19 projecting perpendicularly from the base plate 20 that has outwardly directed longitudinally extending flanges 21, the base plate 20 being mounted on the support 22 having inwardly directed overhanging side walls 23 that enclose the rail flanges 21 as shown in Fig. 4. The upper end of each side wall 19 of the mono-rail is inwardly directed as at 24 with the upper face thereof provided with relatively wide and deep spaced teeth 25 that are engaged by the gears 17 as shown in Fig. 1.

A guide device is associated with the power car, and as illustrated, the platform 1 is preferably formed in two side sections having the adjacent edges thereof engaging a longitudinal bar 26 having its upper edge flush with the upper surface of the platform while the lower edge thereof depends from said platform between the teeth 25 as illustrated in Fig. 4, the bar 26 being secured between the platform sections 1 by the ribs 27 depending from said sections and cross bolts 28 passing thru the ribs and bar, this construction being further illustrated in Fig. 1. The bar 26 is preferably formed integral with a guide block 29 that is positioned between the side walls 19 of the mono-rail, the opposite sides of the block 29 having outwardly opening spaced recessed portions 30 within which recesses anti-friction rollers 31 are journaled upon pins 32. The upper and lower faces of the block are similarly recessed as at 33 and have anti-friction rollers 34 journaled in the recesses upon pins 35. An oil pipe 36 communicating with a supply pipe 37 has a plurality of branch connections 38 with the bearing pins for the several rollers 31 and 34, this construction being clearly shown in Fig. 2. With the guide block positioned between the side walls 19 of the mono-rail, it will at once be seen that the power car is substantially supported in a frictionless manner upon the mono-rail, the bottom rollers 34 engaging the base plate 20 of the mono-rail while the upper set of rollers 34 are disposed for engagement with the inwardly directed upper ends 24 of the mono-rail side walls. The oppositely positioned rollers 31 are disposed for engaging the mono-rail side walls so that roller contacts are interposed between the four sides of the guide block 29 and the adjacent faces of the mono-rail. The guide block 29 provides an interlocking connection between the power car and the mono-rail. As shown in Fig. 1, the front and rear ends of the platform 1 are bent upwardly as at 39 and may function as bumpers. The power car may be further provided with coupling devices at each end thereof, one form being illustrated in Fig. 1 wherein the like 40 is carried by a cross pin 41 associated with the guide roller 42 that is confined by the guide 43. In the form of coupling illustrated in Fig. 6, the link 44 is connected to the cross rod 45 that has its opposite ends extending thru the guides 46.

It will therefore be seen that when the motor 7 is set in operation by the control lever 8 of the box 5, the train of gearing is set in motion, and the gears 17 meshing with the teeth 25 upon the upper side walls 19 of the mono-rail will cause the power car to be propelled in the desired direction. One method of employing the device is illustrated in Fig. 9 wherein the platform 1 is provided with spaced guides 47 thru which a rod 48 slidably extends, the inner rear end of said rod carrying a handle 49 while the outer end of the rod is right-angularly bent to provide a laterally extending arm 50 that is braced as at 51 and capable of being swung to opposite sides of the mono-rail as illustrated by full and dotted lines. In the use of the invention as illustrated in Fig. 9, the mono-rail is located between double tracks 20ª upon which mine cars 50ª are supported, the arm 50 of the rod 48 being shiftable to either side of the mono-rail for engaging the rear end of one of the cars 50ª for propelling the same into mine carriage or elsewhere.

The power car may be supported on spaced trucks as illustrated in Fig. 10, or an ordinary car construction of this type may be provided, the spaced trucks embodying bolsters 52 supporting the car bottom 53, the bolsters 52 carrying depending spaced ribs 27ª that are bolted to the bar 26 positioned therebetween. The mono-rail construction remains identical with the form of the invention illustrated in Fig. 4. If desired, bolts 54 may be employed for anchoring the overhanging walls 23 of the rail support to the flanges 21 upon the base plate of the mono-rail as illustrated in Fig. 5.

A turn table construction for the mono-rail is illustrated in Figs. 7 and 8 wherein the bearing plate 55 mounted upon the supporting blocks 56 is formed with a central depression in which is set the disk 57 that is rotatable upon the pin 58 in a manner as illustrated in Fig. 8. The disk 57 supports a mono-rail section 59 and is

adapted to be rotated for positioning the rail section 59 into alinement with either of the mono-rails 60 or 61. To effect rotation of the disk 57, the upper peripheral edge thereof is provided with a circular series of rack teeth 62 that are engaged by the pinion 63 upon the manually operated crank shaft 64 that is journaled in the bearing 65.

A switch for the mono-rail is illustrated in Fig. 11 wherein the rail section 66 is capable of being shifted as indicated by dotted lines out of alinement with the rail section 66[a] for communication with either of the lateral switch sections 67.

From the above detailed description of the invention, it is believed that the construction and operation thereof will at once be understood, and while there are herein shown and described the preferred embodiments of the present invention, it is nevertheless to be understood that minor changes may be made therein without departing from the spirit and scope of the invention as claimed.

What is claimed as new is:—

1. In a mono-rail railway, a single rail, a power car associated with the rail, rack teeth on the upper edge of the rail, motor driven gears on the power car meshing with the rack teeth on the rail, and a guide block depending from the car and cooperating with the rail.

2. In a mono-rail railway, a single rail, a power car associated with the rail, rack teeth on the upper edge of the rail, motor driven gears on the power car meshing with the rack teeth on the rail, said rail embodying side walls with the horizontal teeth at the upper edges, and a guide block depending from the car and cooperating with the rail.

3. In a mono-rail railway, a single rail, a power car associated with the rail, rack teeth on the upper edge of the rail, motor driven gears on the power car meshing with the rack teeth on the rail, said rail embodying side walls with the horizontal teeth at the upper edges formed upon inwardly directed flanges, and a guide block depending from the car and cooperating with the rail.

4. In a mono-rail railway, a single rail, a power car associated with the rail, rack teeth on the upper edge of the rail, motor driven gears on the power car meshing with the rack teeth on the rail, a guide block depending from the car and cooperating with the rail, and a support for the guide block including a longitudinally extending bar projecting upwardly from the block and depending ribs carried by the car inclosing the bar and secured thereto.

5. In a mono-rail railway, a single rail, a power car associated with the rail, rack teeth on the upper edge of the rail, motor driven gears on the power car meshing with the rack teeth on the rail, said rail embodying side walls with the horizontal teeth at the upper edges, a guide block depending from the car and cooperating with the rail, and a support for the guide block including a longitudinally extending bar projecting upwardly from the block and depending ribs carried by the car inclosing the bar and secured thereto.

6. In a mono-rail railway, a single rail, a power car associated with the rail, rack teeth on the upper edge of the rail, motor driven gears on the power car meshing with the rack teeth on the rail, said rail embodying side walls with the horizontal teeth at the upper edges formed upon inwardly directed flanges, a guide block depending from the car and cooperating with the rail, and a support for the guide block including a longitudinally extending bar projecting upwardly from the block and depending ribs carried by the car inclosing the bar and secured thereto.

7. In a mono-rail railway, a single rail, a power car associated with the rail, rack teeth on the upper edge of the rail, motor driven gears on the power car meshing with the rack teeth on the rail, a guide block depending from the car and cooperating with the rail, a support for the guide block including a longitudinally extending bar projecting upwardly from the block, depending ribs carried by the car inclosing the bar and secured thereto, and anti-friction rollers carried by the guide block for engagement with the adjacent faces of the rail.

8. In a mono-rail railway, a single rail, a power car associated with the rail, rack teeth on the upper edge of the rail, motor driven gears on the power car meshing with the rack teeth on the rail, said rail embodying side walls with the horizontal teeth at the upper edges, a guide block depending from the car and cooperating with the rail, a support for the guide block including a longitudinally extending bar projecting upwardly from the block, depending ribs carried by the car inclosing the bar and secured thereto, and anti-friction rollers carried by the guide block for engagement with the adjacent faces of the rail.

9. In a mono-rail railway, a single rail, a power car associated with the rail, rack teeth on the upper edge of the rail, motor driven gears on the power car meshing with the rack teeth on the rail, said rail embodying side walls with the horizontal teeth at the upper edges formed upon inwardly directed flanges, a guide block depending from the car and cooperating with the rail, a support for the guide block including a longitudinally extending bar projecting upwardly from the block, depending ribs carried by the car inclosing the bar and secured thereto, and anti-friction rollers carried by

the guide block for engagement with the adjacent faces of the rail.

10. In a mono-rail railway, a single rail, a power car associated with the rail, rack teeth on the upper edge of the rail, motor driven gears on the power car meshing with the rack teeth on the rail, a guide block depending from the car and cooperating with the rail, a support for the guide block including a longitudinally extending bar projecting upwardly from the block, depending ribs carried by the car inclosing the bar and secured thereto, a longitudinal rod journaled on the power car, a handle at the rear end thereof, and an angle arm at the forward end of the rod adapted to be laterally extended to either side of the mono-rail for engaging a laterally positioned car to propel the same.

11. In a mono-rail railway, a single rail, a power car associated with the rail, rack teeth on the upper edge of the rail, motor driven gears on the power car meshing with the rack teeth on the rail, said rail embodying side walls with the horizontal teeth at the upper edges, a guide block depending from the car and cooperating with the rail, a support for the guide block including a longitudinally extending bar projecting upwardly from the block, depending ribs carried by the car inclosing the bar and secured thereto, a longitudinal rod journaled on the power car, a handle at the rear end thereof, and an angle arm at the forward end of the rod adapted to be laterally extended to either side of the mono-rail for engaging a laterally positioned car to propel the same.

12. In a mono-rail railway, a single rail, a power car associated with the rail, rack teeth on the upper edge of the rail, motor driven gears on the power car meshing with the rack teeth on the rail, said rail embodying side walls with the horizontal teeth at the upper edges formed upon inwardly directed flanges, a guide block depending from the car and cooperating with the rail, a support for the guide block including a longitudinally extending bar projecting upwardly from the block, depending ribs carried by the car inclosing the bar and secured thereto, a longitudinal rod journaled on the power car, a handle at the rear end thereof, and an angle arm at the forward end of the rod adapted to be laterally extended to either side of the mono-rail for engaging a laterally positioned car to propel the same.

13. In a mono-rail railway, a single rail, a power car associated with the rail, rack teeth on the upper edge of the rail, motor driven gears on the power car meshing with the rack teeth on the rail, a guide block depending from the car and cooperating with the rail, a support for the guide block including a longitudinally extending bar projecting upwardly from the block, depending ribs carried by the car inclosing the bar and secured thereto, anti-friction rollers carried by the guide block for engagement with the adjacent faces of the rail, a longitudinal rod journaled on the power car, a handle at the rear end thereof and an angle arm at the forward end of the rod adapted to be laterally extended to either side of the mono-rail for engaging a laterally positioned car to propel the same.

14. In a mono-rail railway, a single rail, a power car associated with the rail, rack teeth on the upper edge of the rail, motor driven gears on the power car meshing with the rack teeth on the rail, said rail embodying side walls with the horizontal teeth at the upper edges, a guide block depending from the car and cooperating with the rail, a support for the guide block including a longitudinally extending bar projecting upwardly from the block, depending ribs carried by the car inclosing the bar and secured thereto, anti-friction rollers carried by the guide block for engagement with the adjacent faces of the rail, a longitudinal rod journaled on the power car, a handle at the rear end thereof and an angle arm at the forward end of the rod adapted to be laterally extended to either side of the mono-rail for engaging a laterally positioned car to propel the same.

15. In a mono-rail railway, a single rail, a power car associated with the rail, rack teeth on the upper edge of the rail, motor driven gears on the power car meshing with the rack teeth on the rail, said rail embodying side walls with the horizontal teeth at the upper edges formed upon inwardly directed flanges, a guide block depending from the car and cooperating with the rail, a support for the guide block including a longitudinally extending bar projecting upwardly from the block, depending ribs carried by the car inclosing the bar and secured thereto, anti-friction rollers carried by the guide block for engagement with the adjacent faces of the rail, a longitudinal rod journaled on the power car, a handle at the rear end thereof, and an angle arm at the forward end of the rod adapted to be laterally extended to either side of the mono-rail for engaging a laterally positioned car to propel the same.

16. In a mono-rail railway, a single rail embodying a pair of perpendicular side walls having inwardly directed horizontal extensions at their upper ends with rack teeth upon the upper faces of the extensions, a power car associated with the rail, a guide block depending from the car and housed by the rail and anti-friction rollers on the guide block adapted for engaging the adjacent faces of the rail.

17. In a mono-rail railway, a single rail

embodying a pair of perpendicular side walls having inwardly directed horizontal extensions at their upper ends with rack teeth upon the upper faces of the extensions, a power car associated with the rail, a guide block depending from the car and housed by the rail, anti-friction rollers on the guide block adapted for engaging the adjacent faces of the rail, a motor on the car, a pair of gear wheels driven by the motor and said gear wheels meshing with the rack teeth.

18. In a mono-rail railway, a single rail embodying a pair of perpendicular side walls having inwardly directed horizontal extensions at their upper ends with rack teeth upon the upper faces of the extensions, a power car associated with the rail, a guide block depending from the car and housed by the rail, anti-friction rollers on the guide block adapted for engaging the adjacent faces of the rail, and a turn-table construction associated with the rail embodying a rotatable disk and a rail section carried by the disk.

19. In a mono-rail railway, a single rail embodying a pair of perpendicular side walls having inwardly directed horizontal extensions at their upper ends with rack teeth upon the upper faces of the extensions, a power car associated with the rail, a guide block depending from the car and housed by the rail, anti-friction rollers on the guide block adapted for engaging the adjacent faces of the rail, a motor on the car, a pair of gear wheels driven by the motor, said gear wheels meshing with the rack teeth, and a turn-table construction associated with the rail embodying a rotatable disk and a rail section carried by the disk.

20. In a mono-rail railway, a single rail embodying a pair of perpendicular side walls having inwardly directed horizontal extensions at their upper ends with rack teeth upon the upper faces of the extensions, a power car associated with the rail, a guide block depending from the car and housed by the rail, anti-friction rollers on the guide block adapted for engaging the adjacent faces of the rail, a turn-table construction associated with the rail embodying a rotatable disk and a rail section carried by the disk, rack teeth adjacent the peripheral edge of the teeth and a manually operable pinion meshing with the turn-table rack teeth to effect rotation thereof.

21. In a mono-rail railway, a single rail embodying a pair of perpendicular side walls having inwardly directed horizontal extensions at their upper ends with rack teeth upon the upper faces of the extensions, a power car associated with the rail, anti-friction rollers on the guide block adapted for engaging the adjacent faces of the rail, a motor on the car, a pair of gear wheels driven by the motor, said gear wheels meshing with the rack teeth, a turn-table construction associated with the rail embodying a rotatable disk and a rail section carried by the disk, rack teeth adjacent the peripheral edge of the teeth and a manually operable pinion meshing with the turn-table rack teeth to effect rotation thereof.

22. In a mono-rail railway, a single rail, a car associated with the rail and embodying a platform, bolsters supporting the platform and guide blocks depending from the bolsters associated with the rail.

In testimony whereof I affix my signature.

JOSHUA ROSSINI.