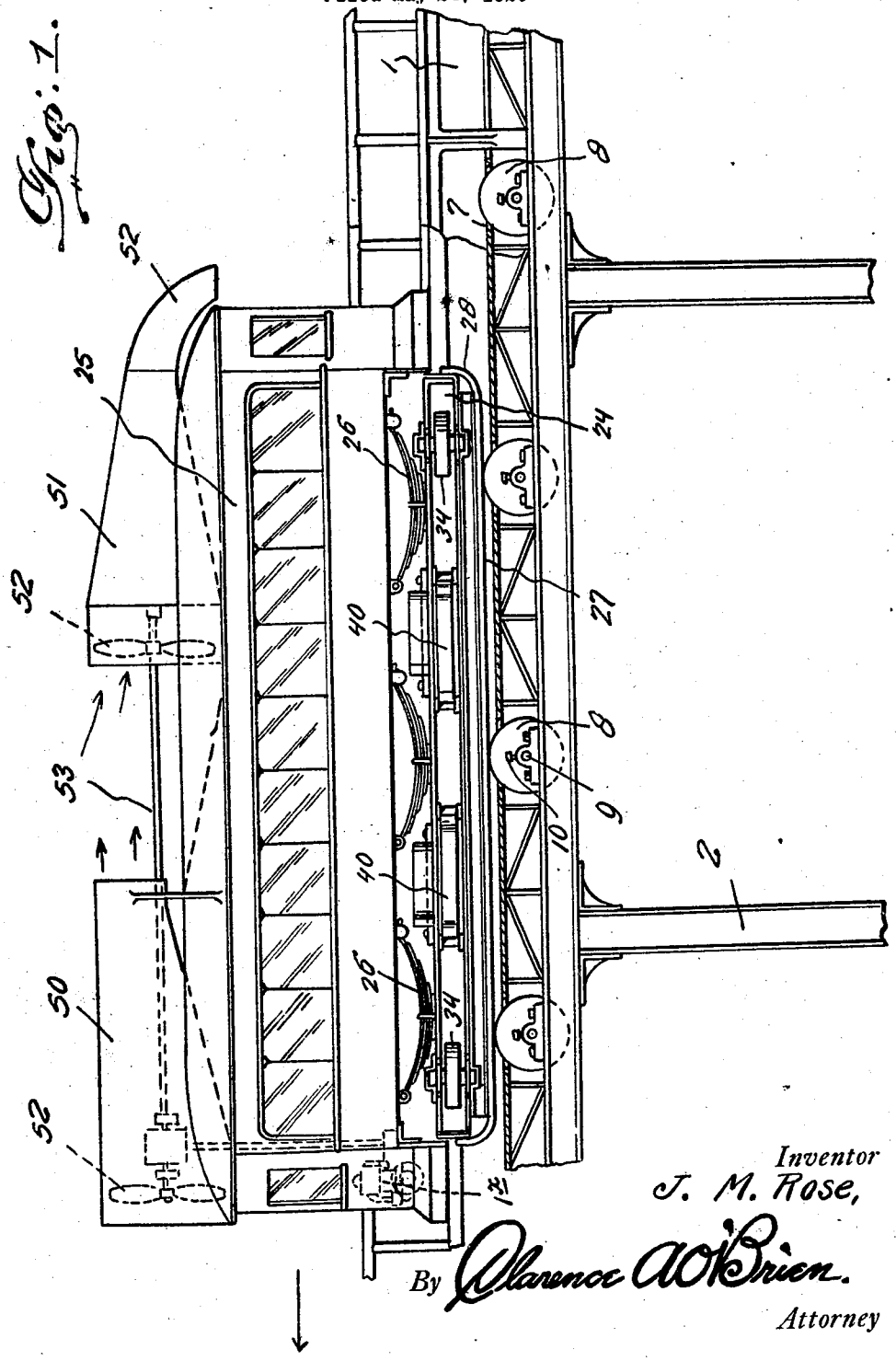
Feb. 8, 1927. 1,616,761

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ELEVATED RAILWAY

Filed May 24, 1926 5 Sheets-Sheet 1

Fig. 1.



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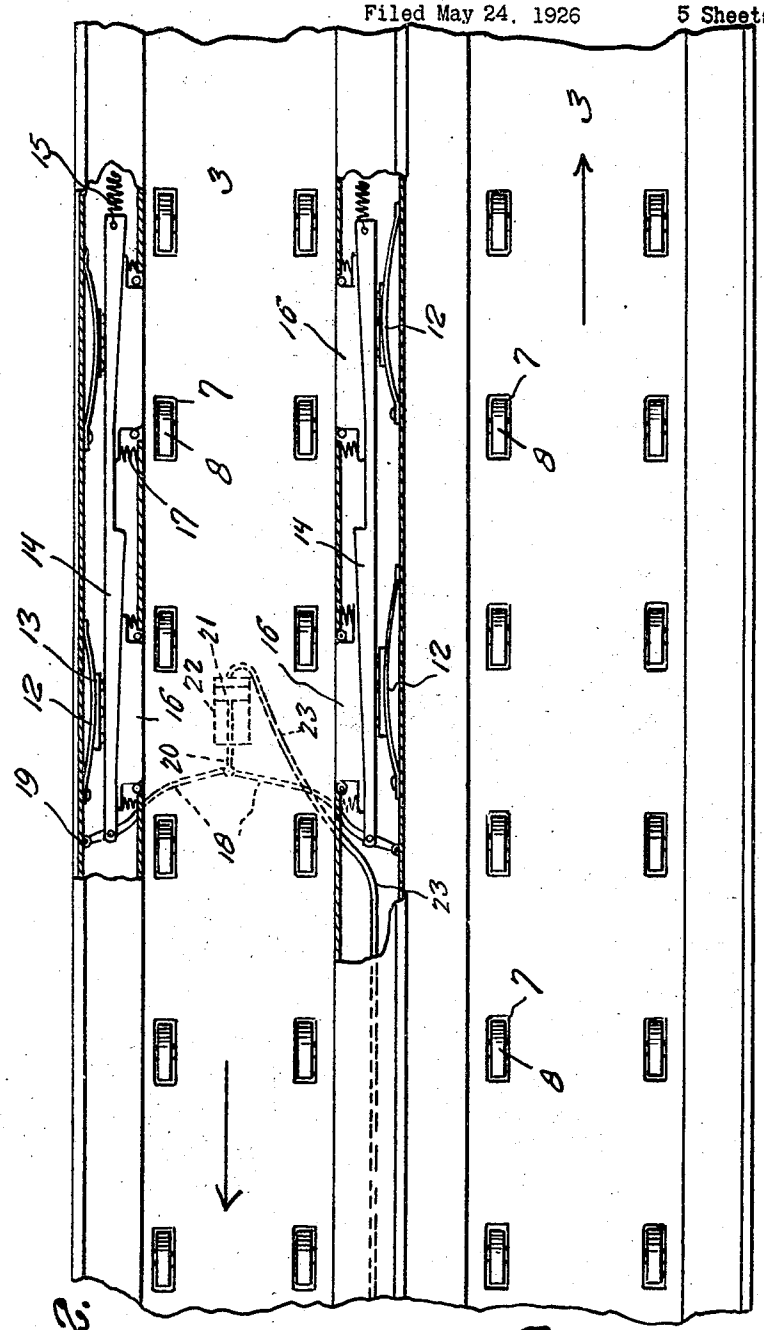


Fig. 2.

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ELEVATED RAILWAY

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Fig: 3.

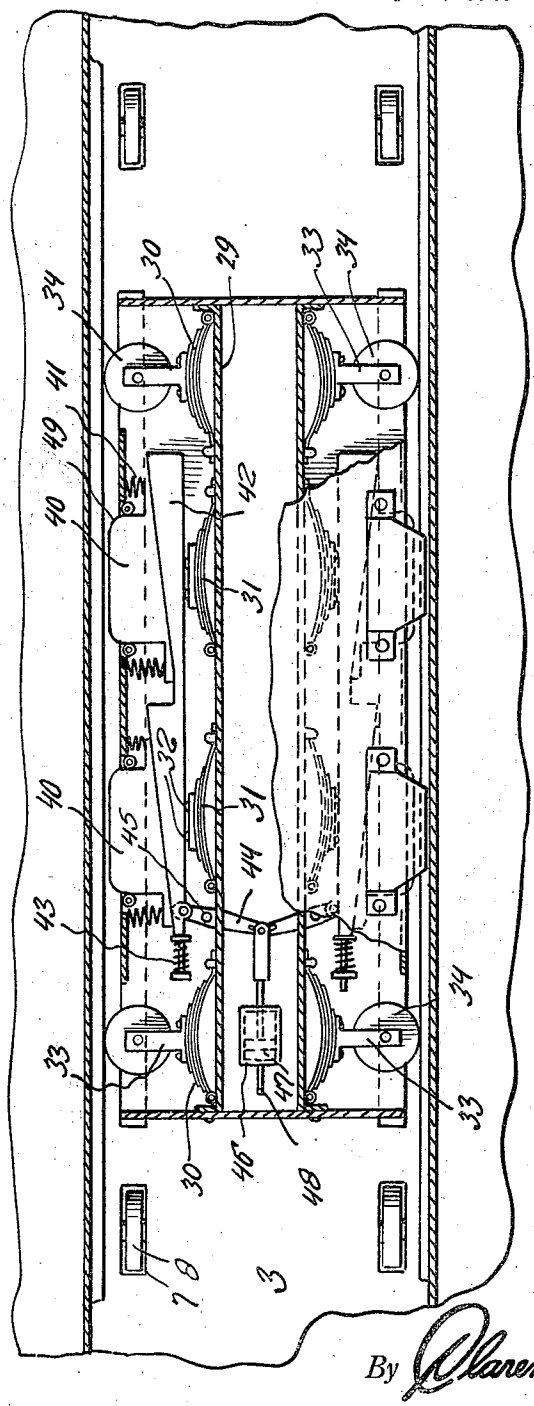
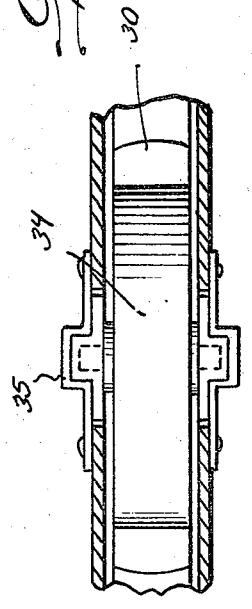


Fig: 5.



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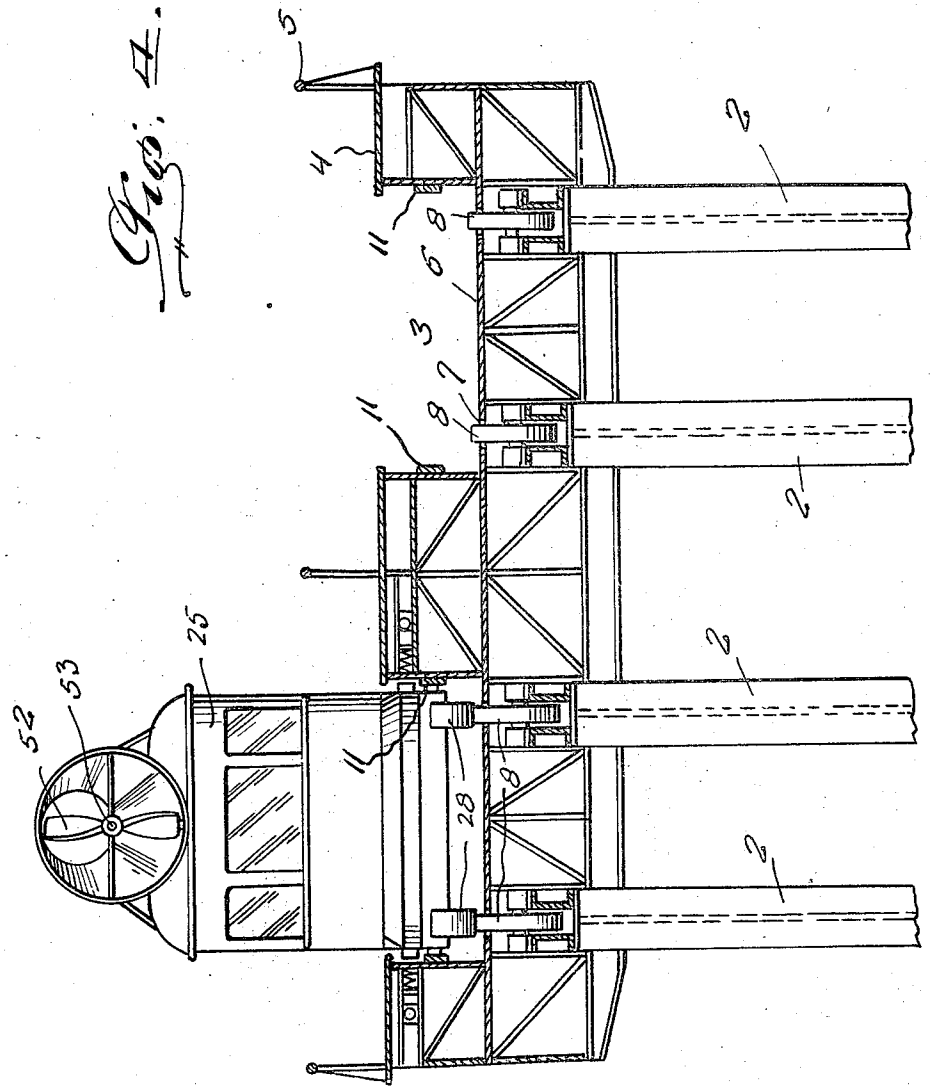
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Fig. 4.



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Fig. 5.

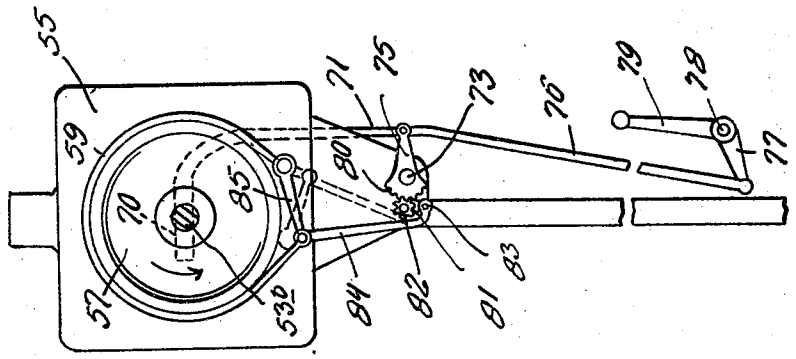
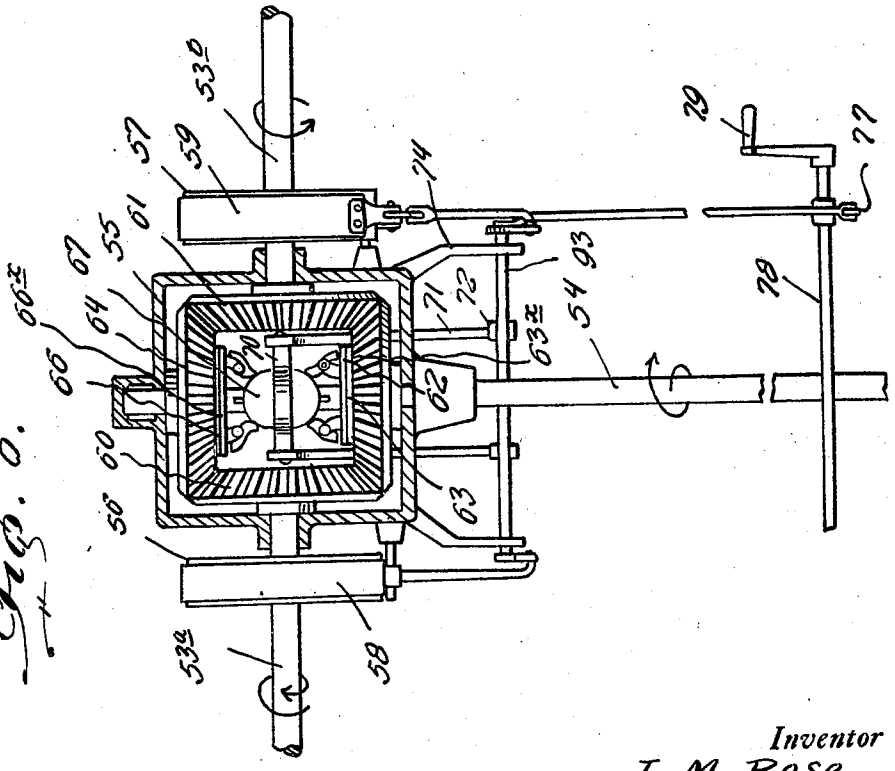


Fig. 6.



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UNITED STATES PATENT OFFICE.

JAMES M. ROSE, OF CORONA, CALIFORNIA.

ELEVATED RAILWAY.

Application filed May 24, 1926. Serial No. 111,310.

My present invention has to do with elevated railways; and it has for its general object the provision of an elevated railway in which air propellers are utilized for the movement of the cars, the said railway being so characterized that the cars may be moved at high speed with safety, and being also characterized in such manner that friction is reduced to a minimum, and the necessity of employing cumbersome equipment is averted.

Other objects and practical advantages of the invention will be fully understood from the following description and claims when the same are read in connection with the drawings, accompanying and forming part of this specification, in which:—

Figure 1 is a side elevation, partly in section, illustrating a portion of a tramway of elevated type and one of the cars constructed in accordance with my invention.

Figure 2 is a view, partly in plan and partly in section, showing a portion of the tramway and its appurtenances, and also bringing out the fact that it is feasible in accordance with my invention to have a plurality of ways alongside each other, some of the ways being designed to be utilized for express trains and other ways for what are known as local trains or trains or cars that are frequently stopped.

Figure 3 is a view showing the lower portion of the car, partly in plan and partly in horizontal section, and also showing a portion of the way that is traversed by the said car.

Figure 4 is a transverse section, with parts in elevation, illustrating the tramway and also illustrating a car of my invention.

Figure 5 is an enlarged detail view showing one of the anti-friction wheels for preventing undue lateral movement of the car incident to the car traversing the way in which it is arranged.

Figure 6 is an enlarged detail view illustrative of the control means within the car.

Figure 7 is a protracted view of the organized mechanism shown in Figure 6.

Similar numerals of reference designate corresponding parts in all of the views of the drawings.

The tramway of my improvement is generally designated by 1 and is shown in Figures 1 and 4. The said tramway is of elevated type, being supported on appropriate uprights 2, and it is shown as including two ways 3, though manifestly without affecting my invention it may have one or any suitable number of ways 3, platforms 4 being provided at opposite sides of each way and each platform 4 equipped with suitable guard rails 5.

The ways 3 are provided with bottom walls 6, and in said walls 6 are openings 7 for the play of car supporting wheels 8 which protrude above the bottom wall 6 as clearly shown in Figures 1 and 4. The ways 3 of the tramway are also illustrated in Figure 2, and by comparison of Figures 1, 2 and 4 it will be understood that the wheels 8 are mounted in bearings 9 on the tramway 1, and the said bearings 9 are equipped with means 10 for the adequate lubrication of the wheel bearings.

At the inner sides of the side walls of each way 3 are stationary longitudinal bars 11 designed for use in holding the car against undue lateral movement incident to a traverse of a way.

By comparison of Figures 1, 2 and 4, it will be understood that the tramway 1 is equipped with means under the control of a train despatcher, signal man or like officer for bringing about stoppage of the car entirely extraneous of the car. The said means comprises bowed springs 12 equipped with anti-friction devices 13 of appropriate character, and longitudinal movable wedge members 14 subject to the action of retractile springs 15. One of the wedge members 14 is arranged together with a pair of the springs 12 at each side of a way 3, and it will also be appreciated from Figure 2 that at each side of the way are two shoes 16 movable laterally by the wedge member 14 and also movable against the action of expansion springs 17. Any appropriate means may, within the purview of my invention, be employed for the synchronous movement toward the left in Figure 2 of the wedge members 14. I prefer, however, to employ for the purpose horizontally disposed levers 18 pivotally connected at their outer ends, as designated by 19 and connected at their inner ends to the rod 20 of a piston 21, disposed in a stationary cylinder 22 and subject to the action of compressed air or other fluid under pressure supplied to the cylinder 22 through a conduit 23, the said conduit 23 being designed to be connected with a source of compressed air supply and to be equipped with a valve, not shown, whereby

a train despatcher or other person in authority may bring about the supply of fluid under pressure to the cylinder 22 so as to actuate the wedge members 14 and thereby so position the shoes 16 that the said shoes will bring about stoppage of the car when the car enters the space between the opposed pairs of shoes 16. Manifestly when fluid under pressure is exhausted from the cylinder 22 to the atmosphere or otherwise, the springs 15 will operate to retract the wedge members 14, and the springs 17 will operate to press the shoes 16 outwardly relatively to the way 3, so that the car will be free to move from between the shoes 16.

The car comprised in my invention includes among other elements a truck 24 and a body 25, the said body 25 being arranged above the truck and being supported by springs 26 and connected through the medium of the said springs 26 with the truck. The said truck 24 carries two longitudinal runners 27 having rounded ends 28, the said runners 27 being arranged in the same longitudinal vertical plane as the wheels 8 and being disposed upon the said wheels 8 and being of a greater width than the wheels 8 in about the proportion illustrated, Figure 4, so as to permit a limited amount of lateral play of the car without liability of the runners 27 leaving the wheels 8. Manifestly the carriage of the car on the wheels 8 in the manner described assures rectilinear movement of the car with but a minimum of friction, and hence it is feasible in the practical use of my improvement for the car to travel at a high rate of speed without undue danger.

The car truck 24 is provided as best shown in Figure 3 with two longitudinal vertically disposed bars 29 arranged at opposite sides of the longitudinal center of the truck, and at the outer side of each bar 29 are bowed springs 30, preferably two in number, and bowed springs 31, preferably two in number, the said springs 31 being equipped at their outer sides with appropriate anti-friction devices 32. The springs 30 are fixed to outwardly extending yokes 33, and appropriately mounted in the said yokes 33 are horizontally disposed anti-friction wheels 34 which are opposed to the before mentioned bars 11 in the ways 3 with a view to guiding the car during its traverse and preventing undue lateral movement of the car and in that way contribute to the factor of safety when the car is moved at a high rate of speed. The yokes 33 are appropriately guided at 35 in the truck 24, and hence while said yokes are free to move rectilinearly outwardly and inwardly, there is no liability of lateral deflection of the yokes. It will also be appreciated in this connection that by virtue of the wheels 34 being frictioned by the springs 30, swaying of the car is prevented and consequently the comfortable riding quality of the car is improved.

In order to enable a person in the car and in authority to stop the car when desired I provide the equipment best shown in Figure 3. The said equipment or the major portion thereof is carried by the truck 24, and by comparison of Figures 1 and 3 it will be understood that the equipment alluded to includes horizontally movable shoes 40 opposed to the bars 11 and subject to the action of expansion springs 41, longitudinally movable wedge members 42 opposed to the said shoes 40 and interposed between the inclined inner sides of the shoes 40 and the anti-friction devices on the springs 31, springs 43 arranged to press the wedge members 42 longitudinally toward the right in Figure 3, levers 44, fulcrumed at 45 and having their outer arms connected to the wedge members 42, a piston cylinder 46, a piston 47 in said cylinder and connected to the inner arms of the levers 44 and a conduit 48 connected to the cylinder 46 and adapted to be connected with a suitable source of compressed air or other fluid pressure supply on the car and also adapted to be equipped with a valve, not shown, whereby fluid under pressure may be let into the cylinder 46 for the application of the shoes 40 to the bars 11, and when it is desired to release the said shoes 40 the same may be accomplished by exhausting fluid pressure from the cylinder 46. The shoes 40 are provided with rounded end corners 49, and because of this and the springs 41 it will be understood that there is little or no liability of the shoes 40 binding against the bars 11. It will also be apparent that by virtue of the mode described of applying the shoes 40 to the bars 11, the car may be quickly though gradually stopped, and this without subjecting the passengers to shock and jar.

At its top the car body 25 is equipped with two longitudinal conduits 50 and 51 for the passage of air, the said conduits being spaced apart, and the rear conduit 51 being provided with a pendent discharge 52 employed, by preference, to discharge air downwardly. It will also be noticed that each of the conduits 50 and 51 is longitudinally tapered rearwardly.

For the propulsion of the car, I employ propellers 52 which are preferably of the same type and for the same purpose as conventional or other approved propellers used on aeroplanes. The said propellers 52 are fixed to a longitudinal shaft 53, and the said shaft is designed to be driven by an internal combustion engine 1^x, an electric motor or any other approved motor carried by the car. I have illustrated in Figure 1 and prefer to employ for the purpose indicated an internal combustion engine, and connected with the said engine is an upright

shaft 54 designed to be rotated by the engine in the direction indicated by arrow in Figure 6. The shaft 53 is in sections 53^a and 53^b, in the preferred embodiment of my invention, Figure 6, and it will be understood that the said sections 53^a and 53^b are extended into a casing 55 as is also the shaft 54, and it will further be understood that the sections 53^a and 53^b are equipped with drums 56 and 57, respectively, and that brake bands 58 and 59 are opposed to the said drums 56 and 57, respectively.

It will also be understood from Figure 6 that a miter gear 60 is fixed to the shaft section 53^a and disposed in the casing 55, that a miter gear 61 is fixed to the shaft section 53^b—and disposed in the casing 55, that a miter gear 62 is loose on the shaft 54 and is disposed in the casing 55 and is provided at its inner side with a friction clutch disk 63, that a miter gear 64 is loose upon the shaft 54 and is disposed in the casing 55 and is provided at its inner side with a friction clutch disk 66, and that a globular member 67 is splined or feathered on the shaft 54 that is disposed within the casing 55 and also within the group of miter gears and is provided with a friction clutch disk 63^x opposed to the before mentioned disk 63, and is also provided with a friction clutch disk 66^x opposed to the before mentioned disk 66. The miter gears 62 and 64 are interposed between and intermeshed with miter gears 60 and 61 and it will be appreciated that when the shaft 54 is being rotated and the clutch disk 63^x is moved and held in engagement with the clutch disk 63, the miter gear 62 will be fixed to the shaft 54, while when the friction clutch disk 66^x is pressed and held in engagement with the friction clutch disk 66, the miter gear 64 will be fixed to the shaft 54. It will further be understood that when the member 67 is in neutral position the gears 63 and 64 as well as the gears 60 and 61 will be idle. For the forward movement of the car that is to say, movement toward the left in Figure 1 as indicated by the large arrow, the front propeller 52 is turned toward the right and the rear propeller 52 is turned toward the left. As will be understood from the following the sudden stoppage of the car is brought about by throwing the clutch described to render the miter gears idle and synchronously tightening the brake bands 58 and 59 on the drums 56 and 57, respectively. Also as the clutch is thrown to fix either of the gears 63 or 64 to the shaft 54, the brake means alluded to will be released. When one of the miter gears on the shaft 54 is fixed to said shaft the front propeller 52 will be turned toward the right and the rear propeller 52 will be turned toward the left, as before described, and when the other miter gear on the shaft 54 is affixed through the medium of the clutch to the said shaft 54, and this incident to release of the brake means, the front propeller 52 will be turned to the left and the rear propeller 52 will be turned toward the right.

The clutch member 67 is connected by a yoke 70 with rods 71 which extend below the casing 55 and are connected to arms 72 fixed on a lock shaft 73, journaled in arms 74 pendent from the casing 55. The said shaft 73 is provided at one end with an arm 75, and the said arm 75 is connected through a rod 76 with a crank 77 on a shaft 78 located within the car body 25, the said shaft 78 being also provided with a lever handle 79. The arm 75 is provided at one end with a gear sector 80, and the said gear sector 80 is meshed with a pinion 81 on a shaft 82 in parallelism with the shaft 73, and the said shaft 82 is provided with arms 83 which are connected by the links 84 and 85, Figure 7, with the ends of the brake bands 58 and 59. It will be apparent from this disclosure that through the medium of a single handle 79, a person in authority within the car body 25 is enabled to control the propulsion of the car and idling of the two propellers 52.

It will be apparent from the foregoing that my improvement in general is inexpensive in construction, and is well adapted to withstand the usage to which railways and cars are ordinarily subjected; also, that the parts are so relatively arranged that the car may be moved at a high rate of speed with a minimum amount of danger, and that when the car is so moved there will be little liability of swaying or casual lateral movement of the car, and that when occasion demands the car may be quickly though gradually stopped, and this by a train despatcher or other authorized person extraneous of the car body or by a car man within the car body and vested with authority to stop and start the car when the same is desirable or necessary.

I have entered into a detailed description of the construction and relative arrangement of the parts embraced in the present and preferred embodiment of my invention in order to impart a full, clear and exact understanding of the said embodiment. I do not desire, however, to be understood as limiting myself to the structure disclosed, my invention being defined by my appended claims within the scope of which modifications may be made without departure from my invention.

Having described my invention, what I claim and desire to secure by Letters-Patent, is:—

1. In combination, a tramway having a bottom wall and side walls, the bottom wall being apertured, wheels carried by said tramway and disposed vertically and ar-

ranged to protrude through and play in the said apertures in the bottom wall of the way, and a car movable in the way and having longitudinal runners disposed on said wheels and also having horizontally disposed spring pressed wheels opposed to the side walls of the way; said car being equipped with means for propulsion of the same.

2. In combination, a tramway having a bottom wall and side walls, the bottom wall being apertured, wheels carried by said tramway and disposed vertically and arranged to protrude through and play in the said apertures in the bottom wall of the way, and a car movable in the way and having longitudinal runners disposed on said wheels and also having horizontally disposed spring pressed wheels opposed to the side walls of the way; said car being equipped with means for propulsion of the same, and the said side walls of the way being equipped with longitudinal bars opposed to the horizontally disposed wheels of the car.

3. In combination, a tramway, vertically disposed wheels carried by said tramway, walls disposed at opposite sides of said wheels a car movable rectilinearly between said side walls and having runners disposed longitudinally and arranged on said wheels and also having spring pressed anti-friction means opposed to the said side walls; the said car being equipped for the propulsion of the same.

4. In combination, a tramway having vertically disposed wheels and also having walls disposed at opposite side of said wheels, a car movable rectilinearly between said side walls and having a runner extending longitudinally of the car and disposed on said wheels, lateral spring-pressed anti-friction means carried by the car and opposed to the side walls of the way, means carried by the car for the propulsion thereof, and means for stopping or braking the car.

5. In combination, a tramway, said tramway having side walls spaced apart and also having anti-friction means at the bottom of the space between said side walls, a car movable between said side walls and on said anti-friction means, means carried by the car for the propulsion of the same, means carried by the car and subject to the control of a person within the car for stopping the car, and operative controlled means carried by the tramway for stopping the car.

6. In combination, a tramway, anti-friction means carried by said tramway, a car movable on said anti-friction means, and means carried by the car for the propulsion of the same; the said means including an air propeller, and means for driving the same; the said air propeller being disposed in a conduit arranged longitudinally of the car and open at its opposite end.

7. In combination, a tramway equipped with anti-friction means, a car movable on said anti-friction means, longitudinal spaced conduits carried by the car and open at their opposite ends, said conduits being tapered in a common direction, air propellers disposed in the comparatively large portions of the conduits, and means carried by the car for driving said propellers.

8. In combination, a tramway, anti-friction means carried by the same, a car disposed and movable on said anti-friction means, an engine carried by the car, longitudinal spaced conduits carried on the car and open at their opposite ends and tapered in a common direction, air propellers arranged in the comparatively large portions of said conduits, shaft sections carrying said propellers, a shaft connected with and adapted to be driven by the engine, a casing receiving portions of said shaft, brake drums on the shaft sections that carry the propellers, miter gears fixed to said shaft sections and disposed in said casing, miter gears loose on the shaft driven by the engine and meshed with the first-named miter gears and also disposed in said casing, means in the casing for clutching the loose miter gears alternately to the shaft and driven by the engine, brake bands opposed to the brake drums, and manually controlled means for applying said brake bands when the clutch means is moved into neutral and for releasing said bands when either of the miter gears normally loose on the engine driven shaft is clutched to said shaft.

In testimony whereof I affix my signature.

JAMES M. ROSE.