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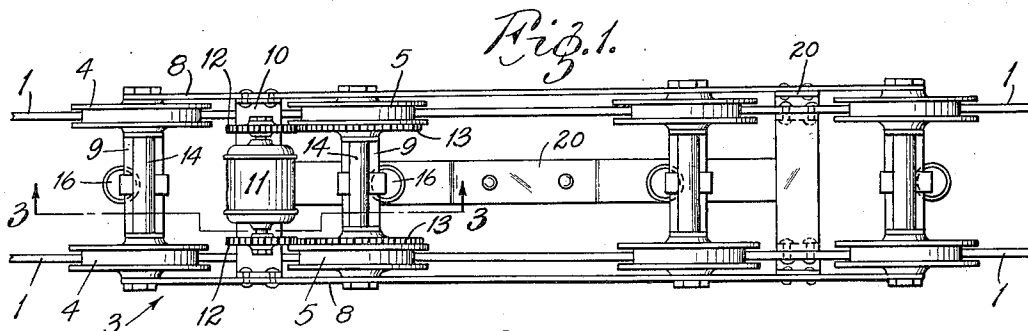
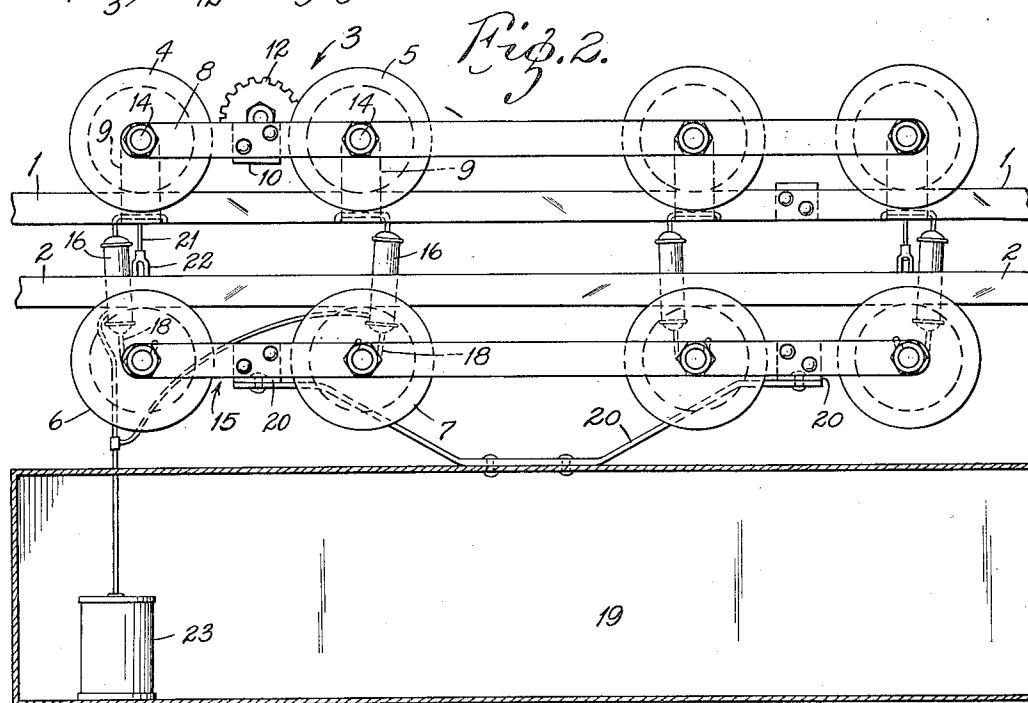
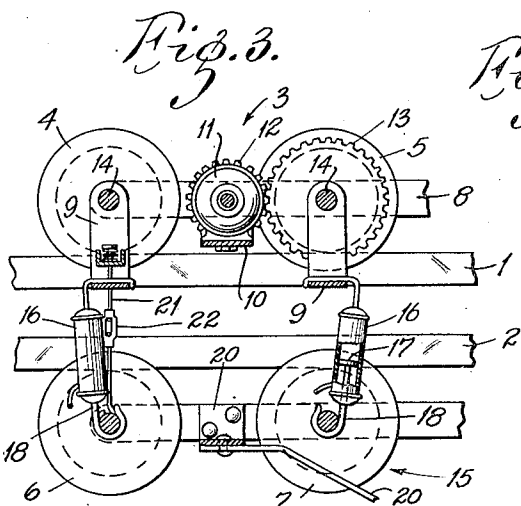
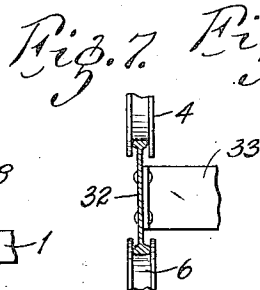
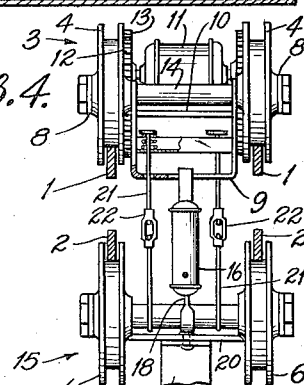
W. C. PLASS

2,018,087

MEANS OF TRANSPORTATION

Filed April 28, 1932

2 Sheets-Sheet 1



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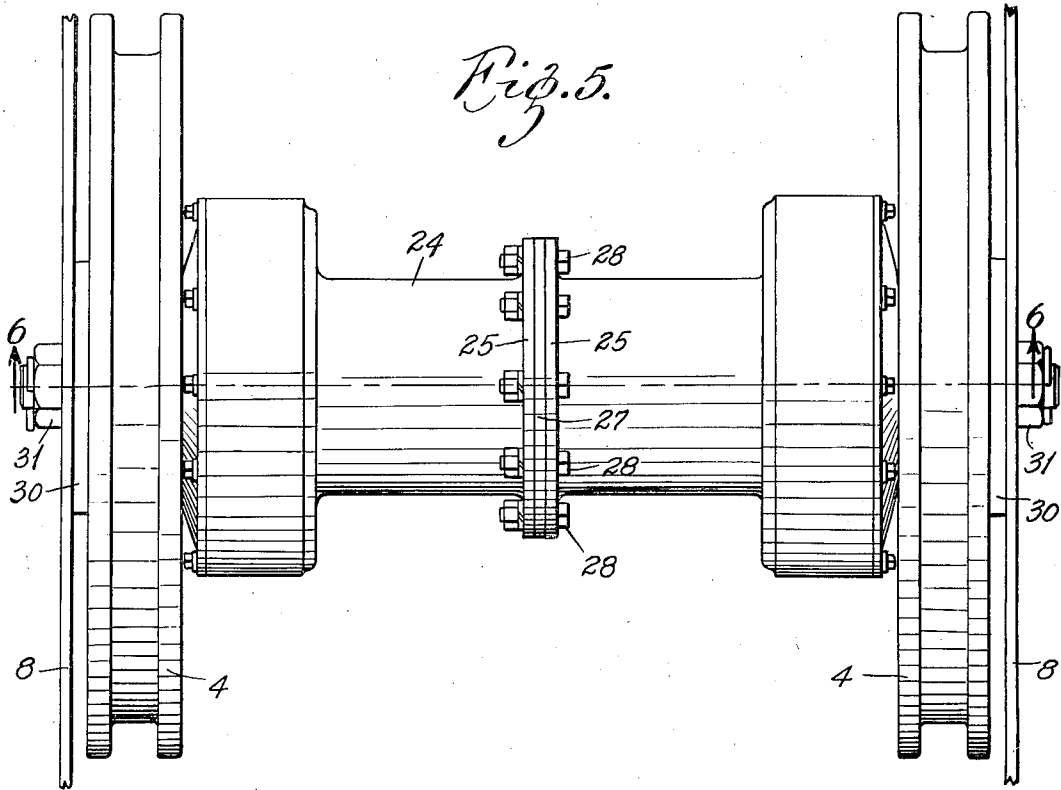
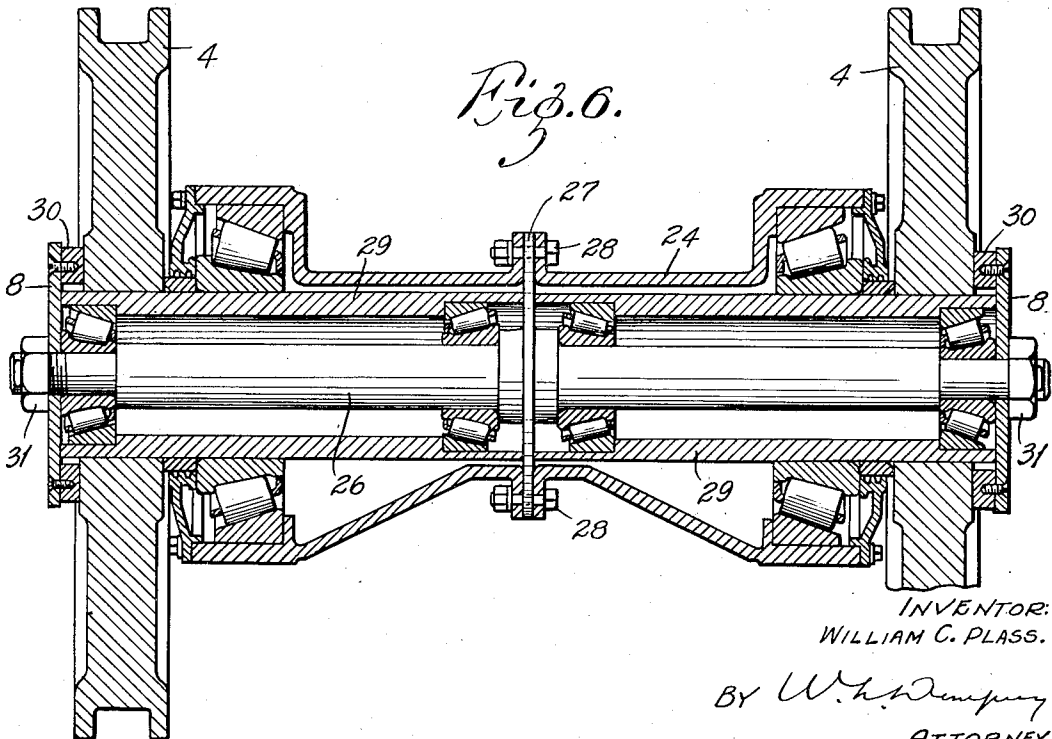
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MEANS OF TRANSPORTATION

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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

2,018,087

MEANS OF TRANSPORTATION

William C. Plass, St. Louis, Mo.

Application April 28, 1932, Serial No. 607,941

2 Claims. (Cl. 105—153)

This invention relates to means of transportation and more particularly to an improvement in means for transporting parcels, mail and other commodities of a like nature.

5 The primary object of this invention is to provide means for transporting mail, parcels, etc. at a very high rate of speed, at a speed comparable or greater than that attained by commercial aeroplanes.

10 Another object of this invention is to provide increased traction without increasing the weight or cost of a locomotive.

A further object of this invention is to furnish means for increasing at will the traction of a locomotive.

A still further object of this invention is to permit freedom of lateral movement of the driving wheels thereby lessening the frictional contact of the flanges of the wheels against the rails.

20 Other and further objects and advantages of this invention will be disclosed in the specification, claims and drawings, in which:—

Fig. 1 is a plan view of the rails and trucks mounted thereon.

25 Fig. 2 is a side view of rails and trucks mounted thereon.

Fig. 3 is a longitudinal section of rails and trucks mounted thereon, taken along the line 3—3 of Fig. 1.

30 Fig. 4 is an end elevation of the upper and lower trucks showing the means for increasing or decreasing the pressure of the wheels on the rails.

Fig. 5 is a view of two wheels mounted on a divided axle.

35 Fig. 6 is a vertical section through the wheels and axle taken along the line 6—6 of Fig. 5.

Fig. 7 is a view of a modified form of rail.

40 Present day commerce and industry have attained such impetuous velocities that there has grown up a widespread and increasingly insistent demand for means of increasing the speed with which mail, parcels and other small commodities may be transported from one point to another.

45 Present means of transportation are strictly limited by fundamental reasons which seem impossible to overcome. The aeroplane while capable of attaining a speed of 200 miles per hour, due to the rarity of the atmosphere and the fact that the ability of the plane to maintain its buoyancy in the air depends upon speed, the weight of the engine, fuselage and necessary equipment reduces the pay-load that may be carried below the minimum for commercial success.

50 This is, also, true in a large measure of the dirigible, but a further limiting factor in that case is that the dirigible's speed is limited well within 100 miles per hour and its cost of construction and maintenance in operation is too great to make it a success for use in carrying mail or parcels. A hundred years of development in railroads, owing to the fact that its speed depends upon the tractive contact of two smooth, polished surfaces, that of the rails and the driving wheels, has held down its speed, even with the best type of track equipment, to less than an average of 50 miles per hour, and makes it patent that very much higher speed cannot be expected from that source.

To meet and overcome these difficulties, I have devised a system of transportation capable of carrying even heavy loads at the rate of 100 miles per hour or better. These means which I have devised comprise a track consisting of four rails, two on each side and designated as 1 and 2, supported and firmly attached to towers, not shown, which may be of steel, stone or other suitable material. Referring to the rails as pairs, the rails 1 and 2 on each side of the track are disposed in parallel one above the other and affixed to the towers so as to hold them in perfect alignment by suitable brackets, not shown, so that the structure constitutes an elevated railway to avoid the hazards and dangers incident to tracks laid on the surface of the earth.

30 The tractor or locomotive, designated as a whole as 3, is provided with four double-flanged wheels, 4—5—6 and 7, two of which (4 and 5) travel on the top surface of rails 1 and the other two (6 and 7) roll on the under surface of rails 2. The wheels 4 and 5 are joined together in a horizontal plane by the beams 8 and held together laterally by the housings 9.

Mounted on the transverse beam 10 is an electric motor 11 provided with gears 12 at each end which mesh with the gears 13 rigidly attached to the axles 14. The truck 3, which is also a tractor or locomotive is resiliently connected with the truck 15, whose wheels contact and roll along the under side of the rails 2. The motors 11 are driven by current which may be supplied either by a third rail or by a trolley, neither of which is shown nor claimed.

45 The trucks 3 and 15 are joined together by a plurality of air cylinders 16 having pistons 17 so reciprocable therein. Each cylinder is rigidly connected at its upper end to the truck 3 and connected by a piston rod 18 to the truck 15 at the other end. The car 19 for carrying parcels, mail, etc. is suspended beneath the trucks 3 and 55

15 by the members 20. The trucks 3 and 15 are further joined together by connecting rods 21 provided with turn-buckles 22. The upper end of the rod 21 is provided with a head which is supported by suitable coil springs under tension so as to provide a limited movement in a vertical plane, and passes through an opening in the truck 3 so as to permit free action by the air cylinders in drawing the trucks closer together or permitting further separation when more or less air is supplied to the air cylinders below the pistons.

Each air cylinder is supplied with air under pressure from an air reservoir 23 located in the car 19 at any convenient point. The air reservoir is in controllable communication with each air cylinder so that when it is desired to increase the traction without adding additional weight, more air is supplied from the reservoir 23 to the cylinders 16 by any suitable manually-operated control cock.

It is obvious that when the pressure in the air cylinders is increased the pistons move downwardly, the wheels 4 and 6, and 5 and 7, are drawn closer together exerting greater pressure upon the rails. The same operation takes place when it is desired to stop or slow up the tractor when the current, in that instance, is cut off and the increased pressure of the air cylinders serves as a brake, the wheels clamping the rails tightly in proportion to the pressure in the cylinders 16.

The ability to increase traction by gripping the rails is one of the chief features of this invention, because thus, without increasing the weight of the tractor, not only is the weight of the loaded added to the tractive contact but by the use of higher air pressure a load can be drawn up more than a 45 degree grade. Thus one of the incidental advantages is that the cost of constructing the track will be greatly reduced since very little grading will be necessary.

While I have shown only one electric motor geared to one set of wheels, it is readily understood that two motors may be utilized on each pair of wheels.

In Figs. 1 to 4 inclusive, for illustrative purposes I have shown a plain solid axle, while my preferred method of construction is shown in detail in Figs. 5 and 6. The housing 24 is split and provided with flanges 25. An axle 26 is provided having a circular flange 27 integral therewith. Bolts 28 fasten the two housings sections to the flange 27. The axle 26 is journaled in the beams 8. The wheels 4, 5, 6, and 7 are press-fitted on two sleeves 29, which in reality constitute a split axle. The sleeves 29 terminate on either side of the flange 27 and are provided with bearings as shown, so that their action is independent of the axle 26 and housing 24. Rings 30, of any desired thickness are interposed be-

tween the beams 8 and the wheels to give the entire structure rigidity. Locknuts 31, which hold axle 26 in place tend to restrict rotation of the axle. The axle 26 does not ordinarily rotate, but may rotate, in which case the housing 24 revolves with it.

The advantage and necessity of using a divided axle is principally that it facilitates taking curves of small radius without causing one or the other of the wheels to slide upon the rail. In other words, it serves the purpose and function, in some respects, of differential gears. The divided axle, also, permits limited longitudinal motion which decreases the friction of the driving wheel flanges against the toe of the rail. This is another important feature of my invention and taken together with the ability to increase traction by clamping the rails and utilizing the wheels for braking purposes constitutes the essence of my invention although every other detail may undergo structural changes.

In Fig. 7 I have illustrated a modified form of rail 32 of substantially I-beam cross-section and provided with two faces to be used instead of the separate rails 1 and 2. Brackets 33 may be welded or riveted, or bolted, to the rail 32 at spaced intervals for supporting from the towers.

It is obvious that as long as the track and equipment are kept in good condition, the double flanges and the four surface contacts with the rails lessen to a minimum the liability of the cars leaving the track, thereby greatly increasing the safety of railroad travel even at excessively high speeds.

Having fully described my invention what I claim as new and useful and desire to protect by Letters Patent is:

1. In a transportation tractor of the class described, adapted for movement along a track, composed of two vertically spaced elements and having wheels on said elements for operative engagement with the upper and lower surfaces respectively of said tracks, the combination of means for resiliently interconnecting said elements one above the other to permit of their movement vertically, and fluid-actuated means operable to selectively increase the grip of said wheels to said tracks to serve as a braking means for the tractor.

2. In a wheeled tractor adapted to move along a track, the combination with means for resiliently interconnecting said wheels with limited vertical movement, the wheels engaging the upper and under sides of said track, of fluid-controlled means independent of said resilient means for forcing said wheels against said upper and lower sides of said track simultaneously, to grip the track more tightly to increase the traction at the will of the operator.

WILLIAM C. PLASS.