

Sept. 3, 1935.

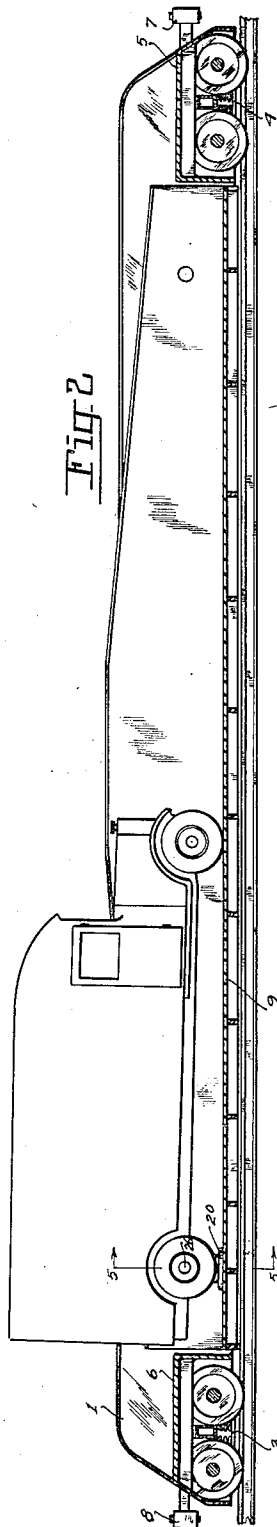
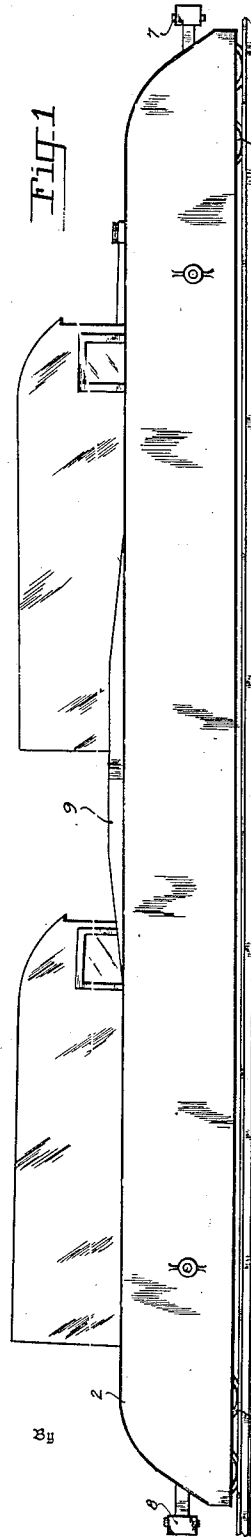
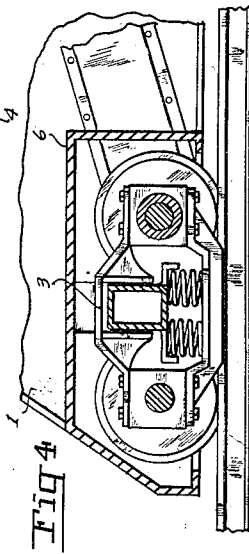
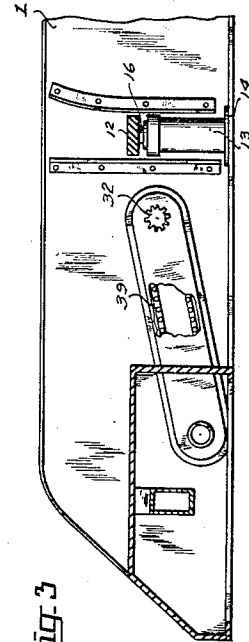
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2,013,345

COMBINATION HIGHWAY AND RAILWAY TRANSPORTATION SYSTEM

Filed May 28, 1932

4 Sheets-Sheet 1



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COMBINATION HIGHWAY AND RAILWAY TRANSPORTATION SYSTEM

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4 Sheets-Sheet 2

Fig. 5

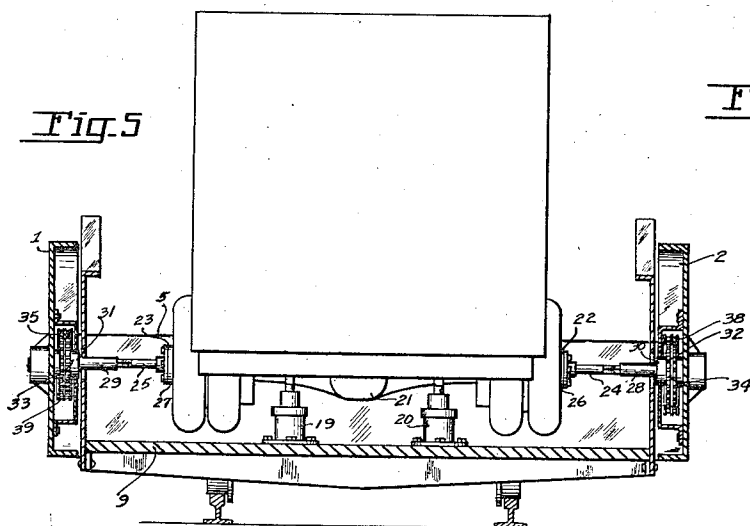


Fig. 6

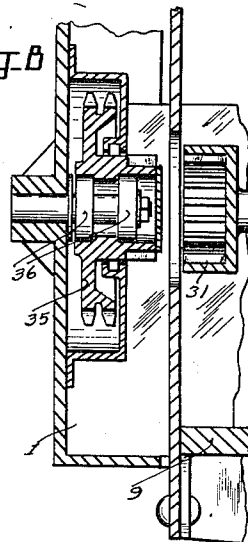


Fig. 7

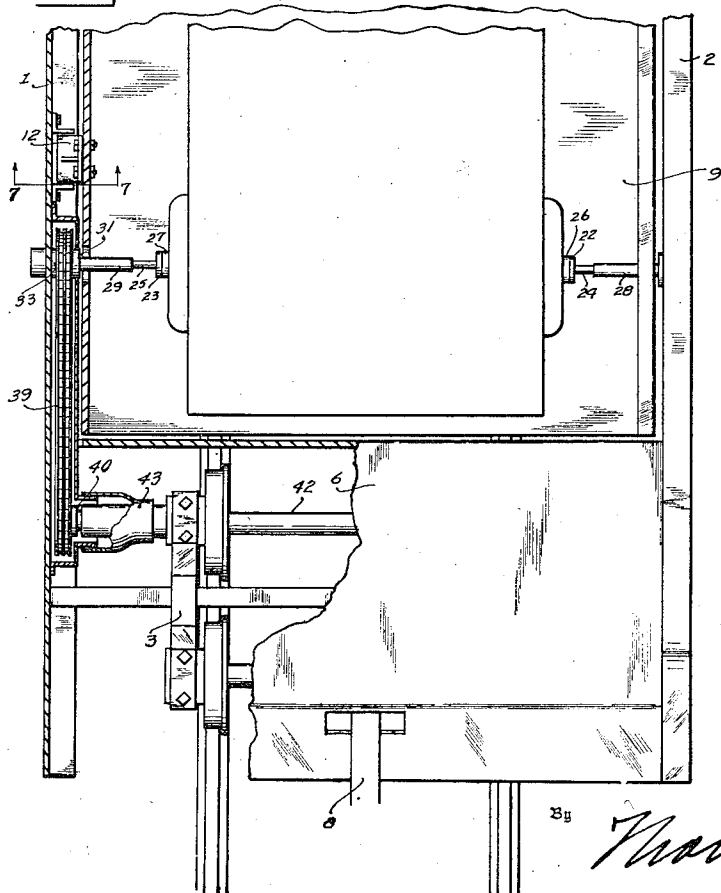


Fig. 8

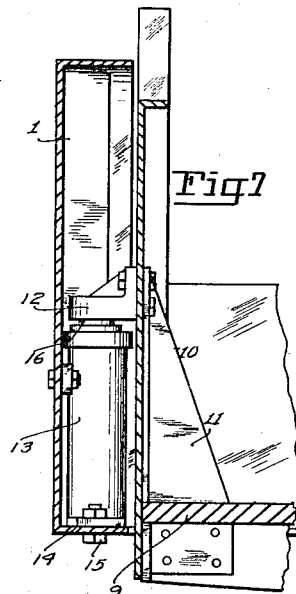


Fig. 9



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4 Sheets-Sheet 3

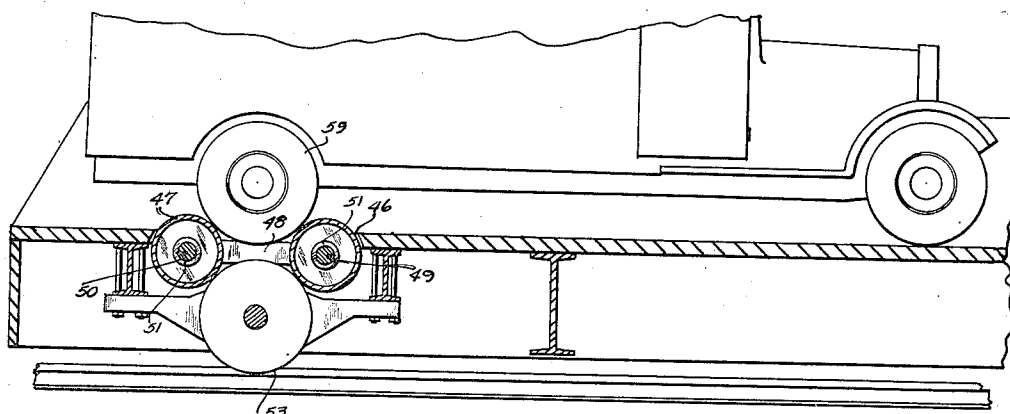


Fig. 10

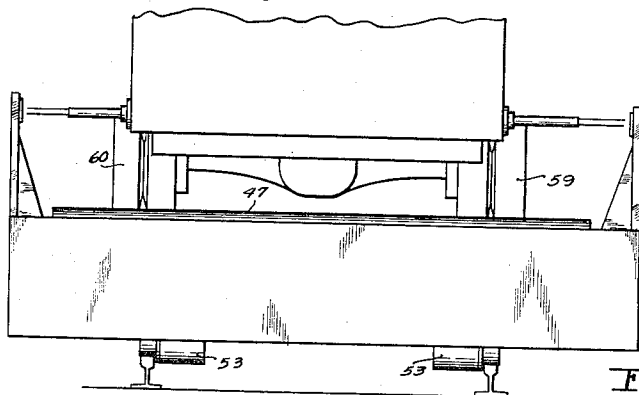


Fig. 11

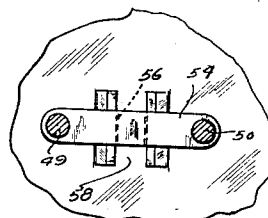


Fig. 13

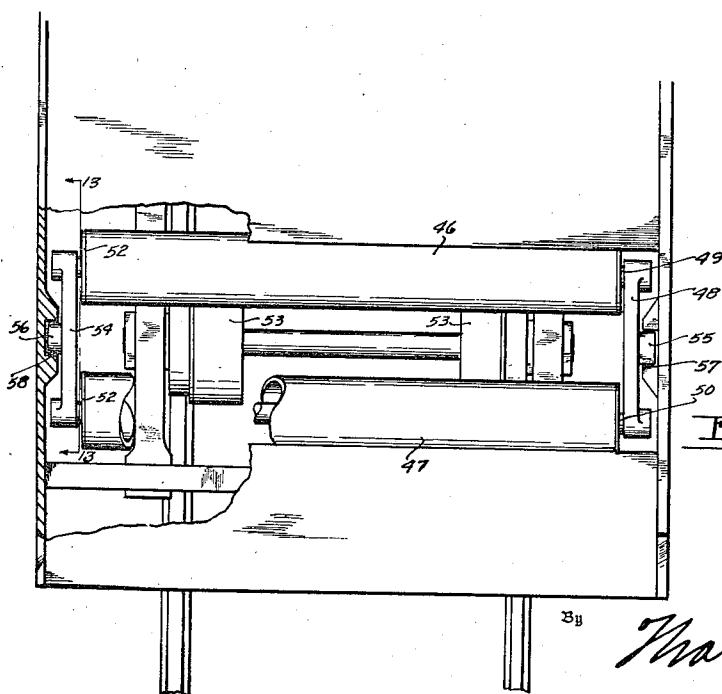


Fig. 12

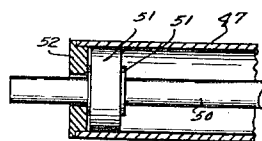


Fig. 14

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COMBINATION HIGHWAY AND RAILWAY TRANSPORTATION SYSTEM

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4 Sheets-Sheet 4

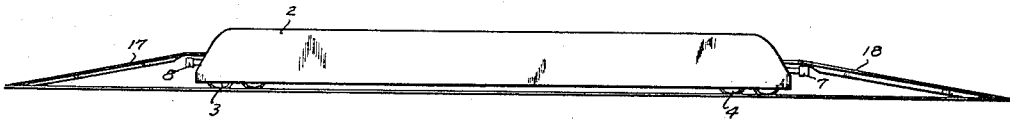


Fig. 15

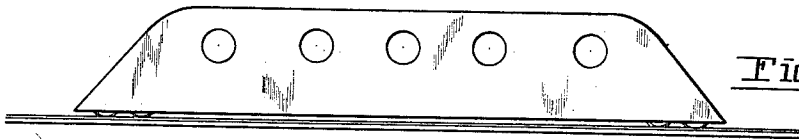


Fig. 16

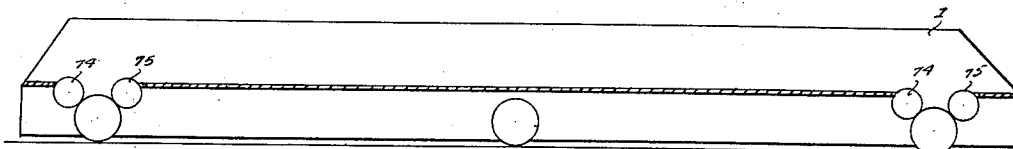


Fig. 17

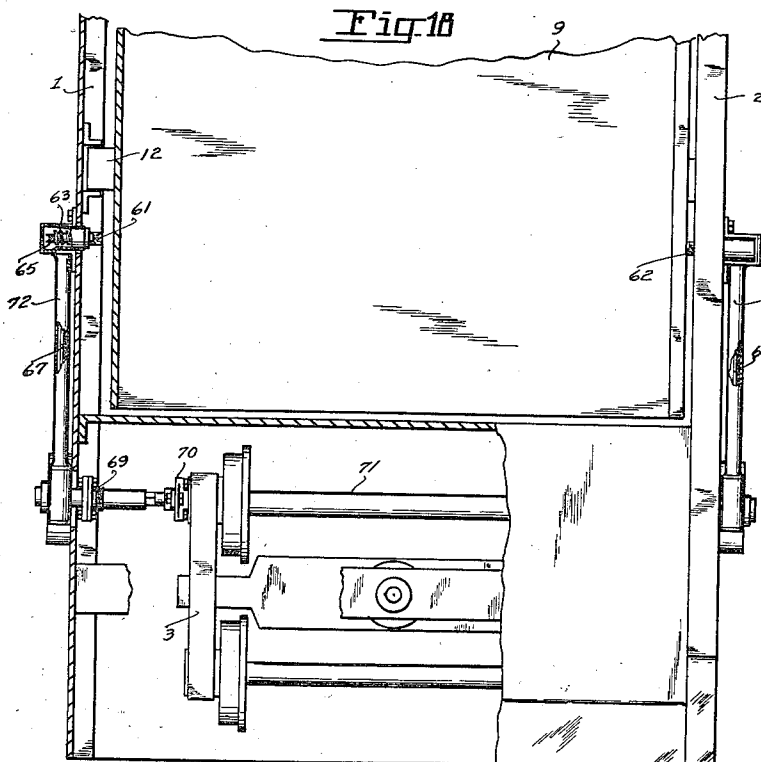


Fig. 18

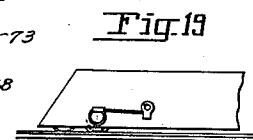


Fig. 19

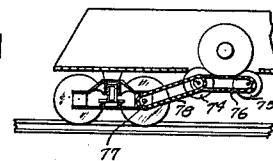


Fig. 20

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UNITED STATES PATENT OFFICE

2,013,345

COMBINATION HIGHWAY AND RAILWAY
TRANSPORTATION SYSTEM

Robert H. Gellatly, Philomath, Oreg.

Application May 28, 1932, Serial No. 614,174

3 Claims. (Cl. 105—159)

My invention relates to a combination car that is adapted for railway transportation and for the hauling of motor vehicle trucks upon the railway tracks. The truck and railway car are adapted for coacting with each other in order that the truck or trucks may self-propel themselves along the highways or by-roads and then be mounted and be attached thereto in order that the railway car may be impelled directly by the truck itself disposed thereupon and therein.

The invention is comprised of a standard, or specially built railway car having a ramp disposed at one, or both ends which may be used as an inclined entrance-way upon and over which a truck or trucks may be made to go in and enter upon and within the railway car. The railway car is preferably made, having side girders and a platform that is adapted for being raised and lowered between the girders in order that the trucks may be lowered within the girders and within the car to lower the center of the gravity of the car when the trucks are therein, means being disposed within the car to adapt the driving wheels of the truck and the driving mechanism of the truck for utilization in the driving of the railway truck.

The primary object of my invention consists in providing a railway car or train of cars, adapted to receive self-propelled motor vehicle trucks therein and thereupon in order that the truck may self-impel itself upon and within the car, while in a heavily loaded condition, and thereafter be made to drive the railway car and be independently operated by the driver of the motor vehicle to provide a transportation unit for long haul transportation that will not require the loading and unloading of the truck load, upon, or within the railway car, and simultaneously provide a transportation unit to be used in conjunction with railway trackage for long hauls and to handle freight expeditiously, economically and with freedom from delay.

A further object of my invention consists in providing a unit that will facilitate the coordination of motor vehicle and railway transportation, that will be flexible and adapted to meet the rapidly growing use of motor vehicles for short hauls, or for relatively long hauls and to utilize the railway trackage and make the same available as a coordinated unit with the motor truck transportation.

A still further object of my invention consists in providing a railway car that may be used in railway service and also be used as an independent unit that will be self-propelled and be self-op-

erated by a motor vehicle truck, when placed thereupon.

And a still further object of my invention consists in providing a railway car unit that will become a locomotive and pull other railway cars by a loaded truck when placed upon the railway car of my invention.

With these and incidental objects in view, the invention consists in certain novel features of construction and combination of parts, the essential elements of which are set forth in the appended claims, and a preferred form of embodiment of which is hereinafter shown with reference to the drawings which accompany and form a part of this specification.

In the drawings:

Fig. 1 is a side view of one of my new and improved railway cars and illustrating two trucks being disposed thereupon.

Fig. 2 is a sectional, side view of the railway car and trucks, as illustrated in Fig. 1.

Fig. 3 is a fragmentary, sectional, side view of a portion of the truck of the railway car, the drive as disposed between the motor vehicle and the driven axle.

Fig. 4 is a fragmentary, sectional, side view of the railway truck wheels and bolster, and illustrating the drive leading thereto.

Fig. 5 is a fragmentary, sectional, end view, of the motor vehicle, shown in use for driving the railway car. In this instance the truck is shown as being resting upon a pair of jacks. This view is taken on line 5—5 of Fig. 2, looking in the direction indicated.

Fig. 6 is a fragmentary, sectional, plan view, of the railway trucks and of the driving mechanism leading from the driving axle of the motor vehicle truck to the driven axle of the railway car.

Fig. 7 is a fragmentary, sectional, end view of the raising and lowering mechanism disposed between the platform and the girders of the railway car. This view is taken on line 7—7 of Fig. 6, looking in the direction indicated.

Fig. 8 is a fragmentary, sectional, plan view, of the drive that is adapted for transferring the drive from the driving axle of the motor vehicle truck to the driving spindle and sprocket disposed upon the railway car.

Fig. 9 is a plan view, of the spindle and splined shaft that transfers the power from the driving axle of the motor vehicle to the spindle and driving sprocket disposed upon the railway car.

Fig. 10 is a fragmentary, sectional, side view, of a modified form of drive, wherein the motor truck wheels are placed upon a pair of driving

rollers that contact with and drive the wheel of the railway car.

Fig. 11 is an end view of the form of drive, as illustrated in Fig. 10.

Fig. 12 is a fragmentary, plan view, partially in section of the driving rollers, as illustrated in end view in Fig. 10.

Fig. 13 is a sectional, side view, of the link mechanism for connecting the rollers upon which the driving wheels of the motor vehicle rest while driving the rollers. The same is taken on line 13—13 of Fig. 12, looking in the direction indicated.

Fig. 14 is a fragmentary, sectional, side view, of one of the rollers upon which the driving wheel of the motor vehicle rests, made to illustrate the bearing disposed between the roller and the axle.

Fig. 15 is a side view of one of the specially built railway cars, illustrating entry and exit ramps disposed at the oppositely disposed ends of the railway car.

Fig. 16 is a side view, of a modified form of car in which the motor trucks are entirely enclosed within a car.

Fig. 17 is a diagrammatical, sectional, side view of the railway car in which the same is adapted for being driven from either end by the motor vehicle truck, as particularly illustrated in Fig. 10.

Fig. 18 is a still further modified form of drive disposed between the driving axle of the motor vehicle and the driving wheel of the railway car and in which coacting gears and shafts are disposed between the driving axle of the truck and the driven axle of the railway car.

Fig. 19 is a fragmentary, side view, of the railway car, made to illustrate in side view the drive, as illustrated in sectional, plan view, in Fig. 18.

Fig. 20 is a diagrammatical, side view of one end of the railway car illustrating the driving wheels of the automotive truck disposed upon the rollers, or drums, the drums, or rollers being coupled together. A chain drive is associated with the drums and an independent chain drive leads therefrom to a sprocket disposed upon the axle of the railway car.

Like reference characters refer to like parts throughout the several views.

My invention is comprised of one, or more cars. The cars are preferably comprised of side girders 1 and 2. The side girders have railway trucks 3 and 4 mounted in their respective ends. Horizontally disposed platforms 5 and 6 secure the girders together and form a housing and top cover for the wheels comprising the trucks of the railway car.

Draw bars 7 and 8 are secured to the platform assembly to adapt the railway car for being moved in a train of railway cars in the usual manner. A platform 9 is disposed between the trucks. The platform is comprised of cross beams and a deck cover.

A plurality of knees 10 extend upwardly from the cross girders and the knees are secured to the cross girders by stiffening gussets 11. A bracket 12 extends outwardly from the respective knees and a jack, as a hydraulic jack 13, is disposed within the side girders. The base 14 of the jack rests upon the base of the girders and is secured thereto by a bolt 15, or other suitable fastening.

The rim 16 of the jack rests upon the under side of the bracket 12. The energizing of the jacks raises the knees and the associated platform assembly.

The primary purpose and object of raising and

lowering the platform is to provide suitable means for lowering the load within the car assembly and to lower the center of gravity of the car and the load being disposed therein.

I provide ramps 17 and 18 at the oppositely disposed ends of the car to facilitate the driving of the motor vehicle trucks upon and within and the removal of the automotive trucks from the railway car.

The platform 9 is raised so that the top surface of the platform will be substantially in line with the top of the railway truck covers 5 and 6 during the loading and the unloading of the automotive trucks from the railway car.

During the transporting of the railway car with the trucks thereupon, the platform, upon which the automotive trucks ride, is lowered. Upon the delivery of the automotive truck upon the platform the automotive trucks are precisely positioned in order that the trucks may be placed over the lifting jacks 19 and 20. The jacks 19 and 20 are preferably made to engage the rear axle housing 21 of the automotive truck.

After the automotive trucks have been delivered upon and within the railway car, and the platform 9 has been positioned into placement, the heads 22 and 23, secured to the spindles 24 and 25, as illustrated in Fig. 9 are secured, by any suitable attaching means to the driving hubs 26 and 27 of the driving axle of the automobile trucks. The spindles 24 and 25 are slidably disposed within the sleeves 28 and 29 to form a driving shaft when assembled.

Spiders 30 and 31 are secured to the hubs 32 and 33 of the driving sprockets 34 and 35. The hubs are mounted upon any suitable anti-friction bearings and the bearings are disposed upon stub shafts, or spindles that are fixedly secured within the side girders 1 and 2. Any suitable driving chains 36 and 39 are trained about the driving sprockets and the chains are also trained about driven sprockets 40 that are directly secured to opposite ends of the axle 42 of the railway car.

To exclude dust and dirt from the assembly, one or more flexible collars 43 may be interposed between the axle 42 and the gear case enclosing the sprockets and driving chains.

Referring to Figs. 10 to 17 inclusive, pairs of drums, or rollers 46 and 47 may be disposed transversely of the platform 9. Axles 49 and 50 are disposed longitudinally of each of the drums, or rollers and an anti-friction bearing 51 is disposed between the shell of the drum, or roller, and the axle, and a head 52 is disposed within each end of the drums, or rollers, to precisely position the axle and bearing therein.

A driving drum 53 that is larger in diameter than the flange of the railway car wheel is disposed upon the car axle, and the drums, or rollers rest directly thereupon. Links 48 and 54 secure the respective axles 49 and 50 in proper spaced working relationship with each other. Positioning shoes 55 and 56 are formed integral with the respective links and the shoes are adapted for being raised and lowered within suitable guideways 57 and 58. These shoes and guideways maintain the rollers in proper working relationship relative to the drums that are disposed upon the axle of the railway car truck.

The driving wheels 59 and 60 of the automotive truck are positioned directly upon the respective drums, or rollers 46 and 47 and the railway car is impelled and driven through the contact of the driving wheels of the automotive truck with the

drums, or rollers, through the drum disposed upon the axle of the automotive railway car.

Referring to Fig. 18, I may take the power from the driving axle of the automotive truck and deliver the same through stub shafts 61 and 62, I mount worms 63 upon the stub shafts. The worms coast with and drive worm gears 65. The respective worm gears are mounted upon shafts 67 and 68. Speed reducers are mounted upon the respective shafts 67 and 68 and the out-put end of the speed reducers delivers power through clutches 69 and 70 and through suitable sleeve and shaft connections to the axle 71 of the railway car. The respective worms and worm gears and the associated shafts are mounted within suitable housings 72 and 73.

It may be found necessary, or desirable, to take the power from the rear wheels of the automotive truck and deliver the same to the axle of the railway car by mechanism, as illustrated in Fig. 20. When so made, the drums 74 and 75 upon which the driving wheels of the automotive truck normally rest are spaced apart and suitable sprockets are placed upon the shafts of the drums. I place a driving chain 76 therearound to deliver the power generated by the drums to the axle 77 through any suitable driving mechanism, as a chain 78.

While the form of mechanism herein shown and described is admirably adapted to fulfill the objects primarily stated, it is to be understood that it is not intended to confine the invention to the one form of embodiment herein shown and described, as it is susceptible of embodiment in various forms, all coming within the scope of the claims which follow.

What I claim is:

1. In a railway car of the class described, comprising a track engaging truck at each of its ends, a pair of spaced parallel girders forming the main body of the car and embracing both of said trucks, platforms secured between the girders at both of their ends and disposed above and terminating at the ends of the trucks, an elongated floor platform extending substantially full length of the car between said trucks and form-

ing the major portion of the floor of the car, parallel side walls extending upwardly from the floor platform, and means interposed between said side walls of the floor platform and said girders of the railway car for lifting and lowering the floor platform out of and into its normal lowered position.

2. In a railway car of the class described, having track engaging trucks at each of its ends and a removable motor vehicle disposed upon said car, a pair of spaced parallel girders disposed at each side of the trucks and connected thereto, a vertically movable platform disposed between the girders and between the trucks and forming the major portion of the floor of the railway car, side walls disposed longitudinally of the platform and connected thereto, means interposed between the girders and the walls of the vertically movable platform for lifting and lowering said platform, means associated with said platform for raising the power transmitting end of the motor vehicle upon the platform, means for transmitting power from power transmitting end of motor vehicle to trucks of the railway car for propulsion of said car.

3. In a railway car of the class described, having a removable motor vehicle disposed thereupon, a vertically movable floor platform disposed between the trucks and between the side walls of the railway car, a plurality of jacks interposed between floor platform and railway car for vertically moving the floor platform, a pair of jacks disposed upon the floor platform for raising the power transmitting end of the motor vehicle disposed thereupon, driving sprockets disposed within the side walls of the railway car, splined driving spindles interposed between power transmitting end of motor vehicle and the driving sprockets, driven sprockets disposed upon both ends of axle in railway car trucks, and a driving chain operatively connecting the driving sprockets disposed within the side walls of the railway car and the driven sprockets disposed upon the axle of the railway car truck.

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