Nov. 5, 1929. W. A. ROSS 1,734,303

TRANSPORTATION SYSTEM

Filed April 9, 1927 2 Sheets-Sheet 1

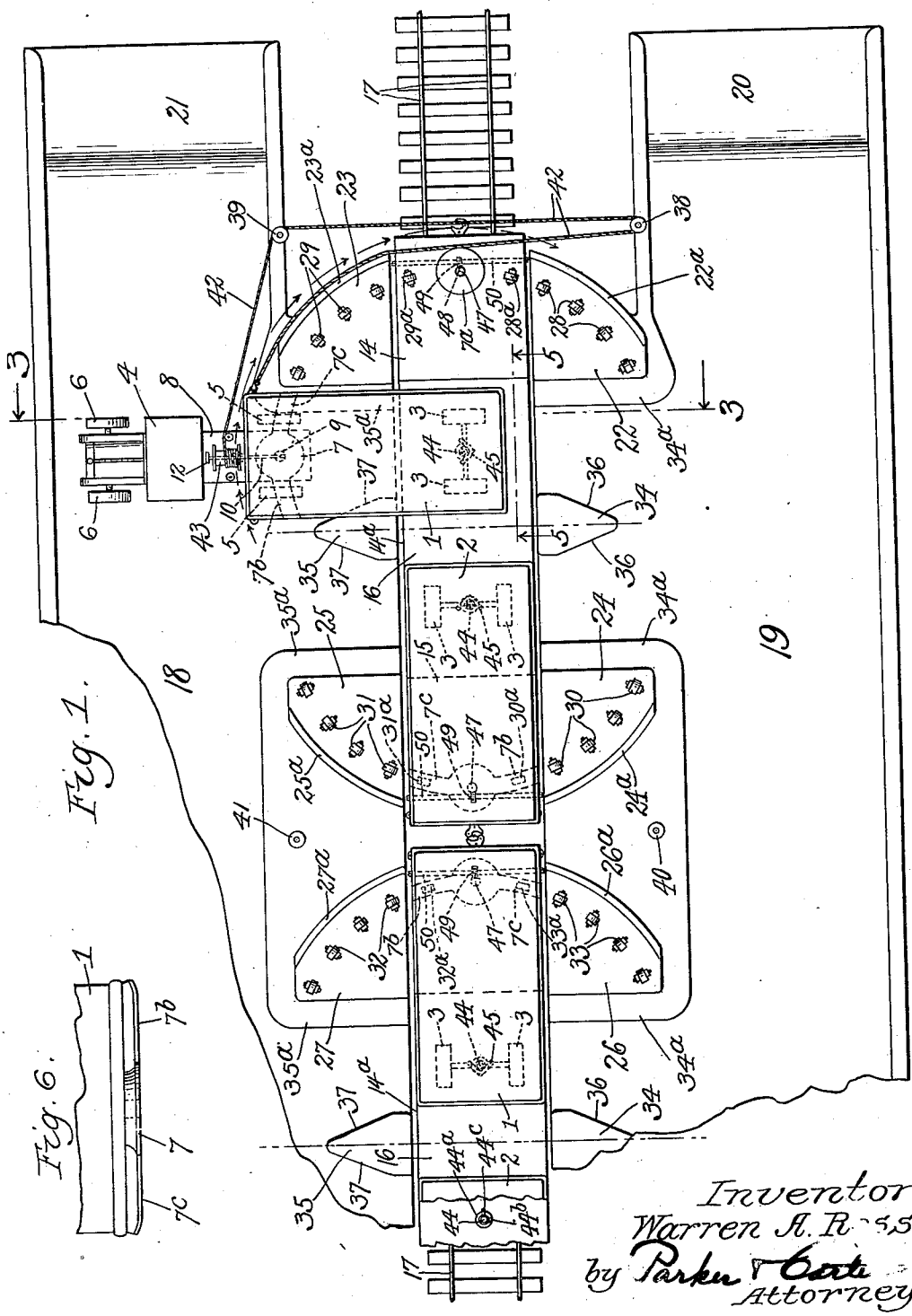


Fig. 1.

Fig. 6.

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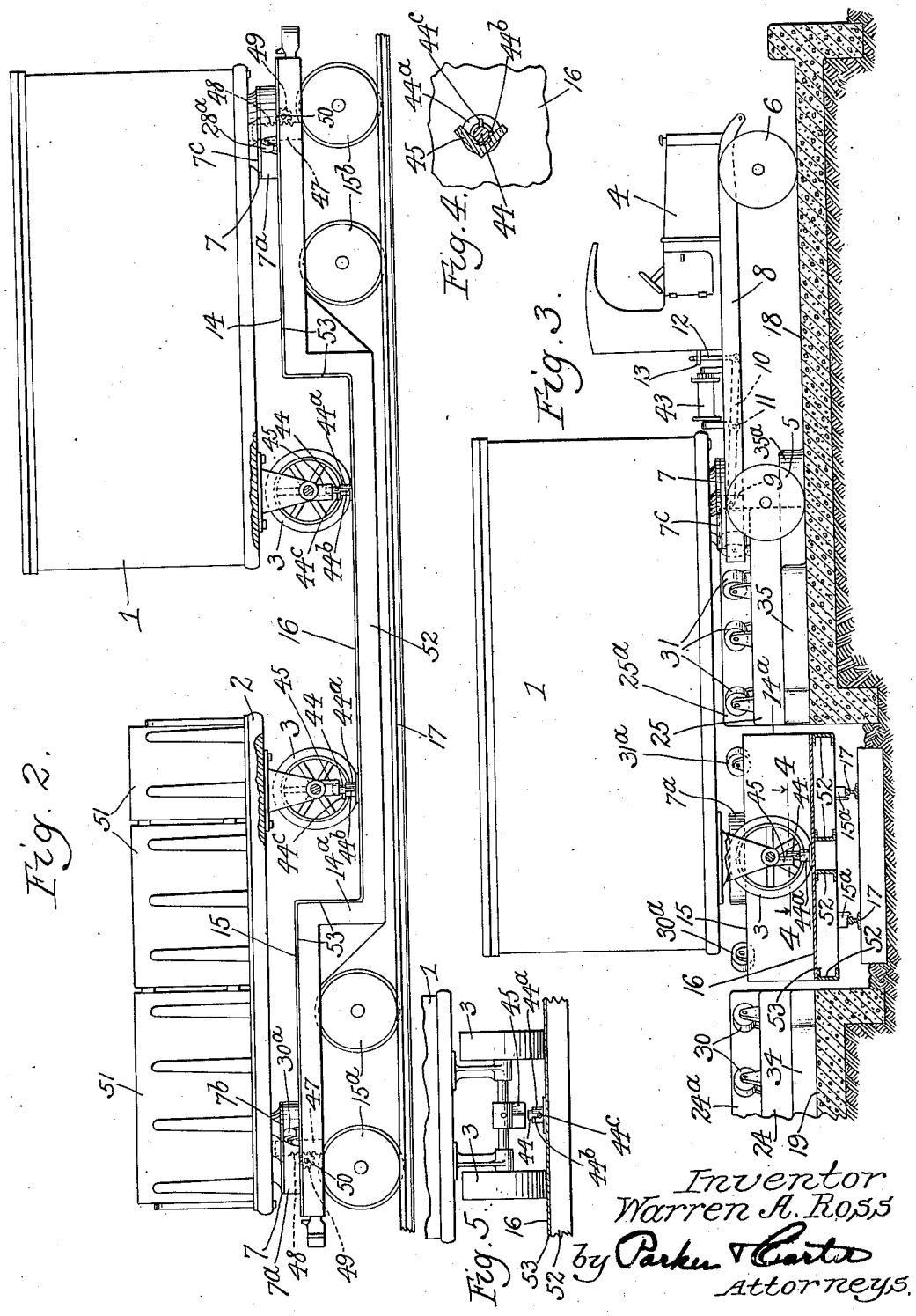


Fig. 2.

Fig. 4.

Fig. 3.

Fig. 5.

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UNITED STATES PATENT OFFICE

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TRANSPORTATION SYSTEM

Application filed April 9, 1927. Serial No. 182,438.

This invention relates to a transportation system and has for its object to provide a new and improved system of this description.

The invention has as a further object to provide a transportation system by means of which goods or materials may be transferred partly by railroad from one place at a distance from the railroad to another place at a distance from the railroad without unloading the goods or materials.

The invention has as a further object to provide a transportation system which minimizes the loss due to breakage in handling the material transported.

The inveniton has as a further object to provide a transportation system by means of which materials may be transported from a point at a distance from a railroad to another point at a distance from a railroad and permit the maximum use of the motor power units.

The invention has as a further object to provide an economical, efficient and safe transportation system.

The invention has other objects which are pointed out in the accompanying description.

Referring now to the drawings:

Fig. 1 is a plan view of a railway car and a loading and unloading device using one form of the system embodying my invention.

Fig. 2 is a side elevation of a car with the material loaded thereon.

Fig. 3 is a sectional view taken on line 3—3 of Fig. 1.

Fig. 4 is a sectional view taken on line 4—4 of Fig. 3.

Fig. 5 is a sectional view, with parts omitted, on line 5—5 of Fig. 1.

Fig. 6 is a view of a portion of the front of the carrying receptacle.

Like numerals refer to like parts throughout the several figures.

In carrying out my invention the material to be transported is loaded in a carrying receptacle which has a separate power element or motor. This motor is connected with the carrying receptacle and the carrying receptacle is transported to the railroad and is there moved on a car, preferably of special design. The power element or motor is then disconnected from the carrying receptacle so that it may be used for transporting other carrying receptacles. The carrying receptacle on the car is then transported to the station nearest the point it is to be delivered to. It is then removed from the car and a power element or motor attached to it and transported to the point where the material is to be delivered.

In order to facilitate the use of the system I prefer to provide a newly improved railway car and loading means therefor.

In the particular construction shown in the drawings I have illustrated two forms of carrying receptacles 1 and 2 arranged for different classes of materials. It is, of course, evident that any other form of carrying receptacle may be used depending upon the particular material to be transported.

The material is properly packed in the carrying receptacle, for example, the carrying receptacle 1 provided with rear wheels 3. A separable power element or motor 4 is removably connected to the carrying receptacle and is preferably provided with the rear wheels 5 and front wheels 6 so that it may be moved about independently of the carrying receptacle 1.

The carrying receptacle is provided at one end with the member 7 which rests upon the body 8 of the power element. This connecting member is provided with an opening through which a connecting member 9 is inserted. This connecting member is connected with a lever 10 pivoted at 11 to the body 8. The lever 10 is controlled by an arm 12 which is held against movement by a holding piece 13 on the lower element when the carrying receptacle is connected therewith.

After the carrying receptacle is loaded it is moved to the railroad and is then transferred to the railway car.

Means is arranged for loading the carrying receptacles on the cars and for arranging the receptacles so that they will not project too high above the track and thereby prevent the car from being topheavy and also prevent the carrying receptacle from striking bridges and other obstructions across the track.

In the particular construction shown the

car 14^a is arranged with three sections, two of the sections 14 and 15 being in substantially the same horizontal plane, and a middle or central section 16 in a different and lower horizontal plane from the other sections.

The wheels 15^a of the car are located under the section 15 and the wheels 15^b are located under the section 14. This permits wheels of the proper size to be used and yet permits the bringing of the carrying receptacles down close to the track. The rear wheels of the carrying receptacles are located on the central section 16 and the member 7, which is in fact the connecting piece of the carrying receptacle, is located on one of the sections 14 or 15.

I prefer to arrange on opposite sides of the railway track 17 platforms 18 and 19 provided with inclined entrances and exits 20 and 21, so that the trucks or power units may easily enter on and be moved off of the platforms. The main portions of the platforms are preferably substantially on a level with the central portion 16 of the car. The platforms are provided with sections 22, 23, 24 and 25 which are substantially on a level with the sections 14 and 15 of the car.

A plurality of these elevated sections may be arranged along the platform for loading a plurality of cars, there being preferably four of them to a car. In Fig. 19 the two elevated sections 26 and 27 for the adjacent car are shown. The elevated sections are preferably provided with the rollers 28, 29, 30, 31, 32 and 33 of such height that the end of the carrying receptacle will rest thereon as it is being moved on to the car. The cars are provided with similar rollers 28^a, 29^a, 30^a, 31^a, 32^a and 33^a. The carrying receptacle is provided with engaging members 7^b and 7^c connected with the member 7 and which engage said rollers.

Intermediate the elevated section of the platform are guiding parts 34 and 35 having inclined faces 36 and 37 arranged to co-operate with guiding parts 34^a and 35^a, so that if the carrying receptacle is not moved centrally on to the car, they will guide it into the right position. Associated with the platforms are the pulleys 38, 39, 40 and 41. A cable 42 is connected with one end of the carrying receptacle and passes around one or more of said pulleys, the carrying receptacle being moved into position by winding the cable on the drum 43 on the power element as shown in Fig. 1. The platforms are preferably provided with the upstanding parts 22^a, 23^a, 24^a, 25^a, 26^a and 27^a of sufficient height to be engaged by the cable 42.

When it is desired to load a carrying receptacle on the car the power element with the carrying receptacle connected therewith is moved up on to one of the platforms, say to platform 19 entering along the inclined part 20. The power element is then turned and moved across the central section 16 of the car until the wheels 3 are approximately centrally located thereon as shown in Fig. 1. The connecting member 9 is then released from the carrying receptacle and the cable 42 connected with the carrying receptacle and with the pulleys 38 and 39. The drum 43 is then rotated and the front end of the carrying receptacle is moved along on the rollers 29 and 29^a until the part 7 rests centrally on the section 14 of the car as shown in Fig. 2.

In order to properly locate the rear end of the carrying receptacle on the car and have it move about a central pivot when the front end is swung around on to the car, I provide a stop 44 on the central portion 16 of the car which is engaged by an engaging member 45 on the carrying receptacle. The part 45 is arranged so that it will not slip off of the part 44 as the carrying receptacle is turned. When the end of the carrying receptacle is centrally located on the section 14 the member 7 rests upon a supporting part 7^a on the car and the hole in the part 7 is opposite a pin 47 on the car extending through the supporting part 7^a. This pin is then moved up into the hole, as shown in Fig. 2 so as to hold the carrying receptacle in proper position.

The pin 47 may be operated by means of a rack 48 and a pinion 49 on a shaft 50 having non-circular ends so that a wrench may be applied thereto to rotate it. The power element 4 may then be moved off the platform along the inclined part 21 and returned for another carrying receptacle. Another carrying receptacle may then be placed on the other end of the car as shown in Fig. 2. For purposes of illustration I have shown this carrying receptacle 2 of a different style adapted to carrying material that can be exposed to the weather such as the stones 51. The pin 47 at one end; and the stop 44 at the other end when in engagement with the engaging member 45 which partially surrounds it, hold the carrying receptacle against relative movement with the car while being transported thereby.

The rear wheels can be left on the carrying receptacles and rest upon the central or lower section of the car, the other end of the carrying receptacle resting upon one of the end sections which is in a higher plane.

It will further be seen that since the carrying receptacles are connected with a power element when on an ordinary road, no wheels are required on the front end. This arrangement also makes it easy to load the carrying receptacles on the car, brings the center of gravity of the carrying receptacle down so that there is no danger of overturning at curves and also brings the tops of the receptacle carrying devices low enough to pass

under bridges, viaducts and other obstructions extending across the track.

The cars 14ª can be constructed at a comparatively low cost as they need only consist of a metal frame consisting of stock materials such as the channels 52 (see Fig. 3) and metal plates 53. When the car containing the carrying receptacles has been transported along the railway to the station nearest where the material is to be delivered, each carrying receptacle is connected with a power element and then transported along the road to the point of delivery. In order to facilitate the removal of the carrying receptacles from the car, the power elements may be provided with some suitable means for moving the end of the carrying receptacles thereon as, for example a drum 43. The flexible connecting piece may be connected with the front end of the carrying receptacle and with the drum 43 and the drum then rotated so as to move the carrying receptacle about the stop 44 and bring it into position on the power element so that the connecting member 9 may be moved up into the connecting piece 7. The stop 44 is then lowered so as to disconnect it from the member 45 in order to permit the carrying receptacle to be moved off of the car. Any means for raising and lowering the stop 44 may be provided. As herein shown the stop 44 is provided with a base 44ª having a slot 44ᵇ, and a pin 44ᶜ on the stop 44 enters said slot when the stop is lowered. When the stop is raised, which is done at the time the carrying receptacle is placed on the cars, the pin 44ᶜ is grasped and moved up above the base 44ª and then moved to one side of the slot 44ᵇ so as to rest on top of the base as shown in the left hand stop in Fig. 2. The adjacent carrying receptacles, if desired, may have their ends connected together.

It will be seen that by means of this system, materials may be easily, quickly, cheaply and safely transported between two distant points both at a distance from the railroad, without unloading the material during the trip thereby preventing breakage and lowering cost and permitting the use of a cheaply constructed railroad car and also permitting the continued use of the power elements employed in moving the material to and from the railroad.

I claim:

1. A transportation system comprising a carrying receptacle adapted to be transported along an ordinary road to the railroad, a railway car having two end sections in substantially the same horizontal plane and a central section in a different and lower plane, one end of the carrying receptacle being lowered on said lower central section and the other end of said carrying receptacle being lowered on one of said end sections.

2. A transportation system comprising a carrying receptacle for the material, a railroad car having two end sections in substantially the same horizontal plane and a central section in a lower horizontal plane and upon which the carrying receptacle is moved, a stop on said central section adapted to be connected with the carrying receptacle and means for moving the receptacle about said stop as a pivot so as to bring one end thereof over one of said end sections.

3. A transportation system comprising a carrying receptacle for the material, a railroad car having two end sections in substantially the same horizontal plane and a central section in a lower horizontal plane and upon which the carrying receptacle is moved, a stop on said central section adapted to be connected with the carrying receptacle, means for moving the receptacle about said stop as a pivot so as to bring one end thereof over one of said end sections, a connecting device for connecting said latter end with said end section, said connecting device and stop holding said carrying receptacle against movement with relation to said car.

4. A transportation system comprising a carrying receptacle for the material to be transported having rear wheels adapted to travel on an ordinary road, a power element having front and rear wheels, means for removably connecting the front end of the carrying receptacle to said power element so that it may be transported along an ordinary road to the railroad, a railway car having two end sections in substantially the same horizontal plane and a central section in a lower horizontal plane across which the power element is driven until the rear wheels of the carrying receptacle rest thereon, means for disconnecting the other end of said carrying receptacle from the power element and moving it over on to one of the end sections of said car, and connecting devices for connecting said carrying receptacle to the car so as to hold it in position while being transported thereby.

5. A transportation system comprising a carrying receptacle for the material to be transported, adapted to be moved along an ordinary road, a railway car having two end sections in substantially the same horizontal plane and a central section in a lower horizontal plane, means for supporting one end of said carrying receptacle on said central lower section, and the other end upon one of said higher end sections.

6. A transportation system comprising a carrying receptacle for the material to be transported, adapted to be moved along an ordinary road, a railway car having two end sections in substantially the same horizontal plane, a central section in a lower horizontal plane, means for supporting one end of said carrying receptacle on said central lower section, and the other end upon one of said higher end sections, and means associated

with said central section and said end section for connecting the carrying receptacle to the railway car while being transported thereby.

7. A transportation system comprising a carrying receptacle for the material to be transported, a railway car having two end sections in substantially the same horizontal plane and a central section in a lower horizontal plane, a platform for loading said car having a lower portion opposite which the central section of the car is placed and two higher portions opposite which the end sections of the car are placed.

8. A transportation system comprising a car having two end sections in substantially the same horizontal plane, a central section in a lower horizontal plane and supporting wheels located under the end sections, two carrying receptacles having wheels at one end supported upon said central section and means for supporting the front ends of said receptacles on said end sections.

9. A transportation system comprising a platform for loading cars having a lower portion and two higher portions on opposite sides of said lower portion, said lower portion and two higher portions being on the same side of the car to be loaded.

10. A transportation system comprising a platform, a car receiving space at one side of said platform, the platform having a central lower portion and two higher end portions and friction reducing devices on said higher portions.

Signed at Chicago, county of Cook and State of Illinois, this sixth day of April, 1927.

WARREN A. ROSS.