

April 19, 1960

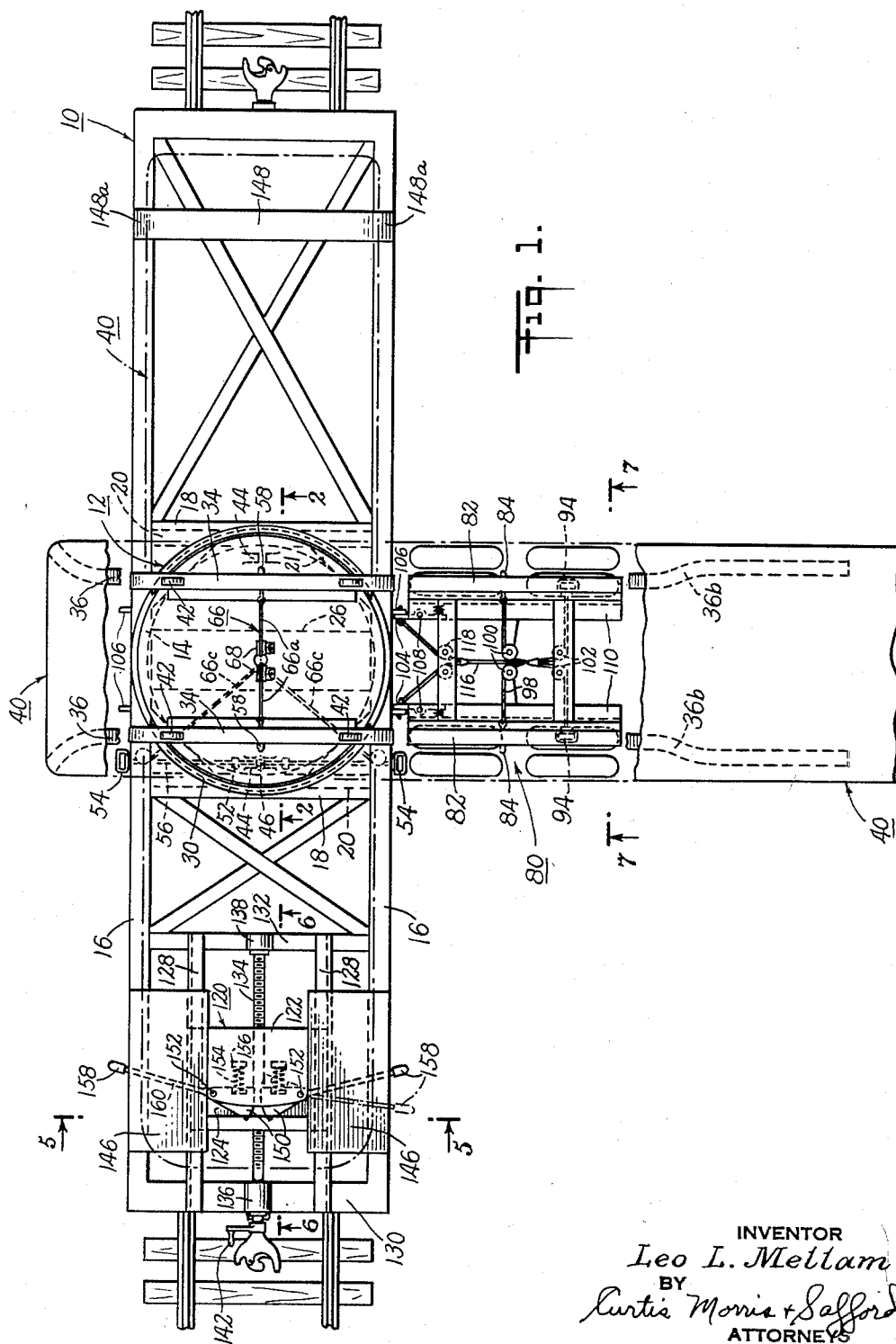
L. L. MELLAM

2,933,052

FREIGHT HANDLING SYSTEM

Filed Jan. 31, 1957

4 Sheets-Sheet 1



L. L. MELLAM
FREIGHT HANDLING SYSTEM

4 Sheets-Sheet 2

Fig. 2.

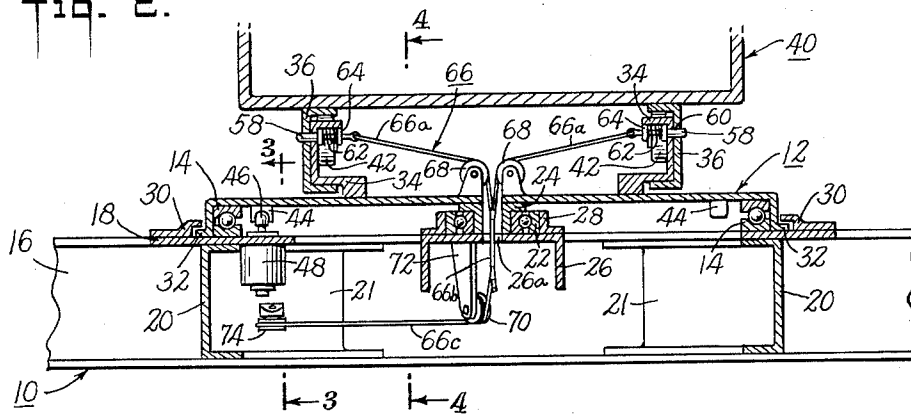


Fig. 3.

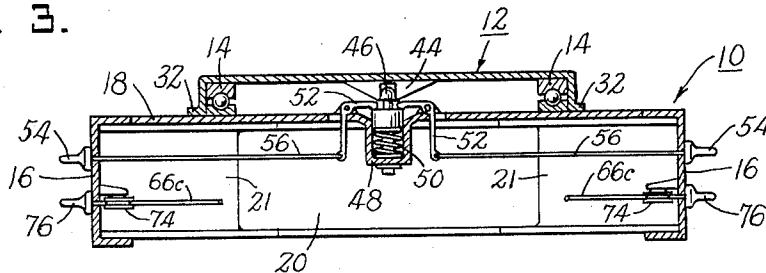
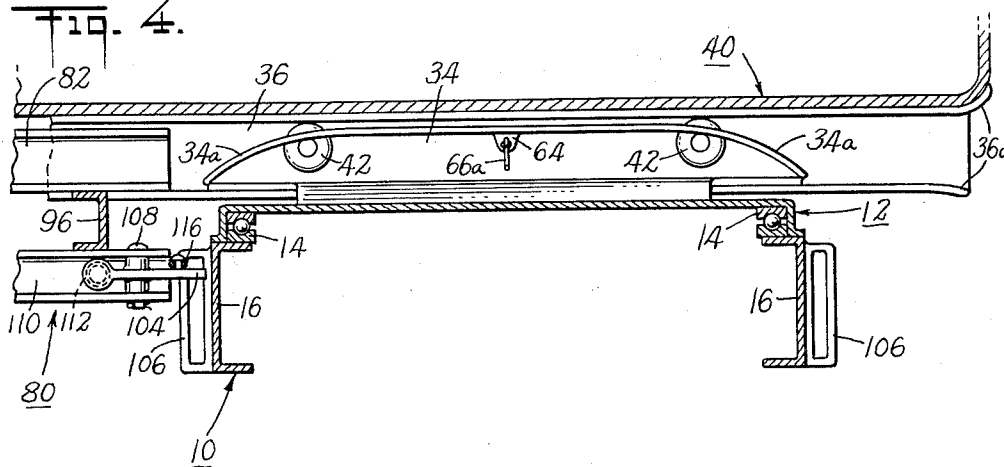


Fig. 4.



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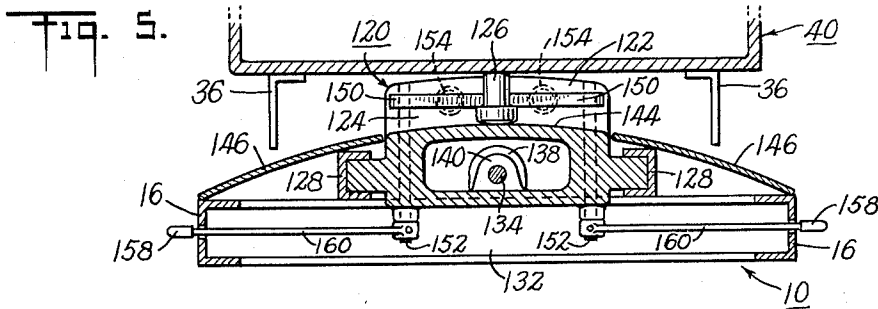
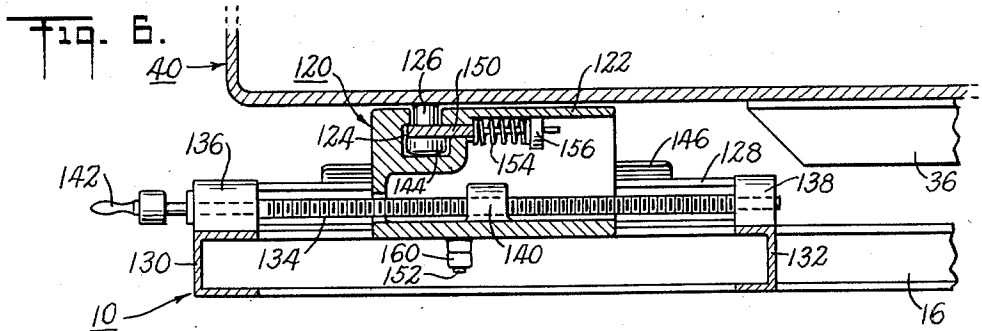
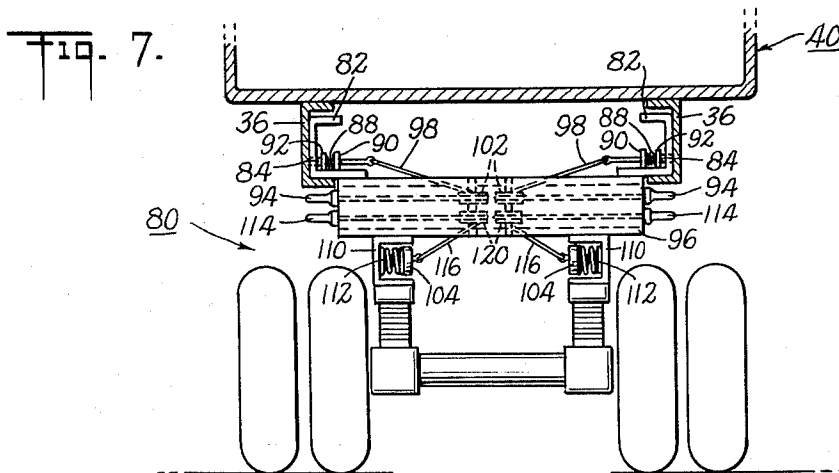
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4 Sheets-Sheet 3



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FREIGHT HANDLING SYSTEM

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4 Sheets-Sheet 4

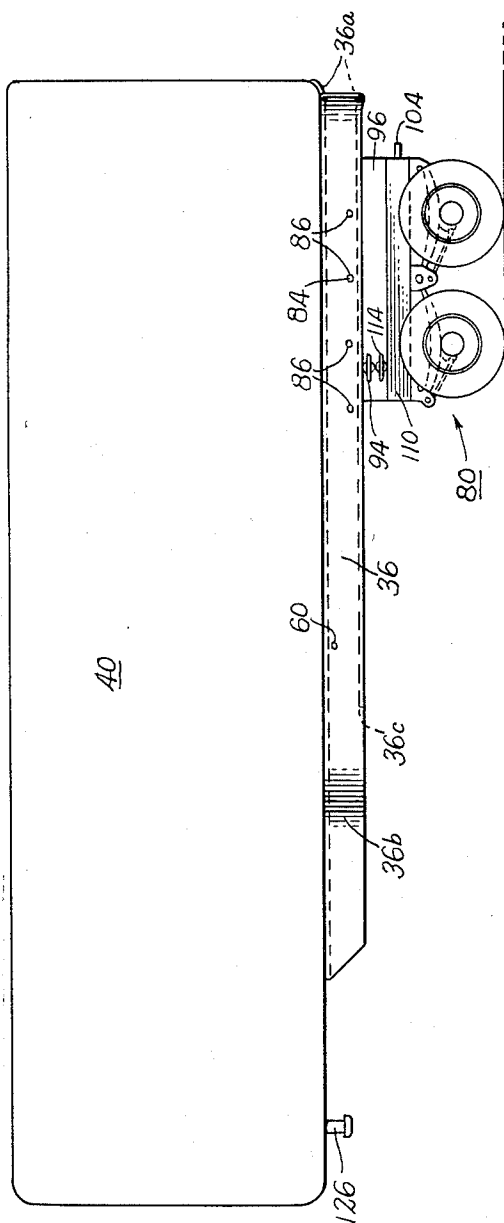
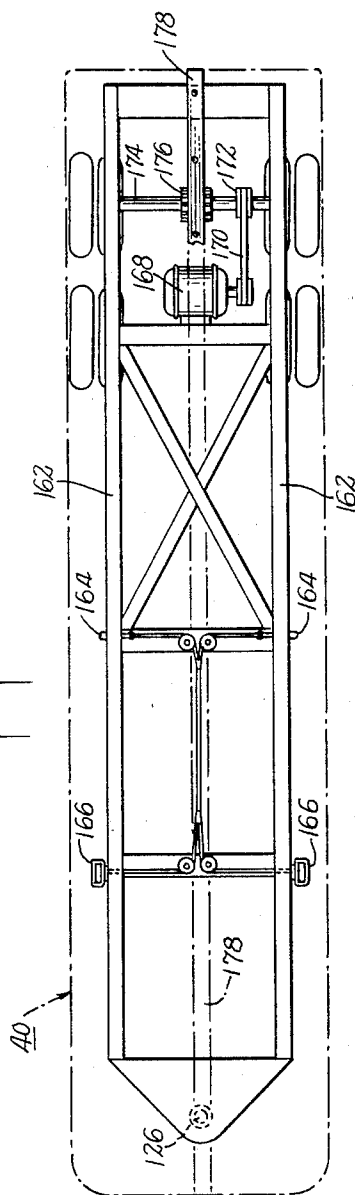


Fig. 8.



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FREIGHT HANDLING SYSTEM

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Application January 31, 1957, Serial No. 637,462

8 Claims. (Cl. 105—368)

This invention relates to handling of freight which is transported by a combination of rail and highway carriers, and particularly concerns apparatus for transferring freight in bulk between a railway car and a highway truck quickly, easily, and without requiring any special equipment or facilities at the point of transfer.

In recent years many unsuccessful efforts have been made to provide a satisfactory system of transferring freight in bulk between railway cars and highway trucks. One of the motivations for these efforts is the fact that the railroads have found it difficult in many instances to compete with trucking lines in carrying large shipments to consignees who are not located directly on a railway spur or siding because the goods, even though shipped by rail, must be transferred to a highway truck before they ultimately reach the consignee. The labor involved in transferring the goods piecemeal from a freight car to a highway truck has greatly added to the cost of rail transport and has been a great incentive in favor of highway transport. The sharply rising cost of labor has aggravated the problem for the railroads. Moreover, in rail shipments between points located on different rail lines, the switching of cars from one rail line to another has involved difficulties and delays which would not have been encountered by highway carriers. Because of these and many similar factors, the proportion of the total freight movements carried by the railroad has steadily diminished during the past several decades. In 1930, the railroads of the United States moved 75% of the nation's freight, whereas in 1954 they moved only 51%. Most of this loss in the percentage of freight moved by rail is attributable to competition from highway carriers.

As a consequence, the railroads have within the past several years been devoting large and increasing amounts of effort and expense to the development of a freight handling system which would eliminate any advantage in the use of highway transport on all except the shortest hauls.

One of the systems which has been subjected to extensive experimental use, is the so-called "piggy-back" system, wherein a loaded trailer body is lifted from a highway trailer onto a railway flat car and vice versa, for example by crane. A similar system is the "container" system wherein containers, usually much smaller in size than a trailer body, are lifted from one highway trailer to the flat car and vice versa, for example by heavy-duty fork lift trucks.

Both of these systems however, have the disadvantage that special equipment such as cranes, fork lift trucks or the like is required to effect the transfer of the trailer body or container between the highway trailer and the railway car. Moreover, the transfer consumes substantial time and entails considerable labor.

It is among the objects of the present invention to provide apparatus whereby a trailer body or a smaller container can be transferred rapidly and easily from a highway truck to a railway car or vice versa without any equipment for lifting the trailer body or container. Another object is that of providing apparatus so constructed

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that the transfer can be effected at any area where the ground at either side of the railroad track is reasonably level without requiring any special installation or other facilities. A further object is the provision of such a system whereby the transfer can be made to or from a railway connected in the middle of the trail and can be made to or from either side of the railway car. Still another object is that of providing apparatus of the type described which is relatively inexpensive, and which may be operated readily even by unskilled personnel, and which is well adapted to give reliable, trouble-free service over long periods of use under all reasonable conditions.

In the drawings:

Figure 1 is a more or less diagrammatic top plan view of the elements of a freight handling system embodying principles of the present invention, including a railway car, a highway wheel assembly releasably attached to the side of the railway car, and a trailer body, shown partly in phantom view during transfer from the railway car to the highway wheel assembly.

Figure 2 is a fragmentary longitudinal sectional view of the railway car and a highway trailer thereon taken generally along the line 2—2 of Figure 1.

Figures 3 and 4 are transverse sectional views taken generally along the lines 3—3 and 4—4, respectively, of Figure 2.

Figures 5, 6 and 7 are sectional views taken along the lines 5—5, 6—6 and 7—7, respectively, of Figure 1.

Figure 8 is a side elevational view of the trailer body in position on the highway wheel assembly.

Figure 9 is a top plan view of a trailer frame constituting an alternative embodiment of the invention with the position of a trailer body therein indicated by broken lines.

Generally speaking, the freight handling system of the present invention includes three basic elements: a highway car, a highway wheel assembly, and a trailer adapted to be carried either by the railway car or the highway wheel assembly and transferrable between the two without any equipment other than the highway truck tractor.

The railway car is generally designated 10 in Figure 1. As may be seen in that figure, the railway car 10 is generally similar to a conventional railway flat car except that the usual flooring has been omitted. At the center of the top of the railway car is a circular turntable generally designated 12 which is supported for rotation in a horizontal plane by a ball thrust bearing 14 of large diameter (see Figure 2). The side portions of this ball thrust bearing 14 rest upon and are supported by the side framing members 16 of the railway car while the fore and aft portions of the bearing rest upon transversely extending plates 18 which are supported by transverse channels 20 and diagonal channels 21. The turntable 12 is held against lateral movement by a radial ball bearing 22 which receives a hollow bushing 24 secured to the under surface of the turntable at its central axis. The bearing 22 is supported within a flange 28 fixed on a transverse channel 26. The turntable 12 is prevented from tipping by a pair of flange members 30 which are secured to the upper surface of the transverse plates 18 and which overhang a lip 32 which projects outwardly from the skirt of the turntable 12 around its entire circumference.

Fixed at the upper surface of the turntable 12 are a pair of rail members 34. These rails 34 are arranged parallel to each other and are spaced apart to fit inside a pair of channels 36 which extend along the bottom of the trailer body 40 and which form the principal longitudinal framing members of the trailer body. So that the trailer body 40 may be slid onto and off of the rails 34 with minimum friction, the rails 34 are provided at their upper

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surfaces with a pair of rollers 42 which are rotatably supported on ball bearings and project through rectangular openings in the upper surface of the rails 34 to engage the inner surface of the upper flanges of the channels 36. The rails 34 are of such size that they fit rather closely within the channels 36, as shown in Figure 2, and hold the trailer body 40 against lateral movement or tipping on the turntable 12.

When it is desired to place the trailer body 40 onto or remove it from the railway car, the turntable 12 is oriented so that the rails 34 extend perpendicularly to the long axis of the railway car, as shown in Figure 1. To hold the turntable 12 in this position, a pair of latch receiving members 44 (Figures 1 and 3) are secured to the under surface of the turntable 12 at diametrically opposite points. The latch receiving members 44 respectively cooperate in the two perpendicular positions of the turntable with a latching pin 46 which is supported for vertical sliding movement in a cup 48 (Figure 3) projecting downwardly from one of the transverse plates 18. The latching pin 46 is urged upwardly by means of a coil spring 50 which encircles the reduced lower end of the pin 46 and is compressed between the lower end of the cup 48 and the enlarged central portion of the pin 46. When the turntable 12 is rotated, one of the inclined surfaces at the sides of one of the latch receiving members 44 engages the upper end of the latching pin 46 and cams the latching pin 46 downwardly against the resistance of the spring 50 until the latching pin 46 enters into the recess in the latch receiving member 44, as shown in Figure 3, thereby locking the turntable 12 against rotation.

To unlock the turntable 12 for rotation, a pair of bell cranks 52 are provided, one pivotally mounted at each side of the latching pin 46, with the upper arms of each of the bell cranks 52 bearing on the upper surface of the enlarged central portion of the latching pin 46. The bell cranks 52 are actuated by means of handles 54 at either side of the railway car 10, which are connected to the lower ends of the depending legs of the bell cranks 52 by cables 56 which extend through the side frames 16 of the railway car. Pulling either one of the handles 54 rotates the bell crank 52 to which it is connected, pulling down the latching pin 46 against the resistance of the spring 50 and unlocking the turntable 12 for free rotation.

To hold the trailer body 40 in proper longitudinal position on the rails 34 of the turntable 12, a pair of latching pins 58 (Figures 1 and 2) are provided. These latching pins extend through the vertical webs of the rails 34 and are adapted to be engaged in holes 60 (Figure 8) in the channel frames 36 of the trailer body. These holes 60 are so located that they will be engaged by the latching pins 58 when the center of gravity of the trailer body 40 is coincident with the axis of the turntable 12.

The latching pins 58 are urged outwardly by means of coil springs 62 which encircle the inner portions of the shanks of the latching pins 58 and are compressed between collars on the latching pins and tabs 64 depending from the upper flanges of the rails 34. As may be seen in Figure 1, the vertical webs of the channel frames 36 of the trailer body 40 are flared outwardly at the rear end of the trailer body to facilitate guiding of the channel frames onto the rails 34. When the trailer body 40 is pushed onto the turntable 12, these flared end portions of the vertical webs of the channel frames 36 will engage the outer ends of the latching pins 58 and press them inwardly against the resistance of the springs 62. As the trailer body 40 continues to move rearwardly across the turntable 12, the outer ends of the latching pins 58 slide along the inner face of the vertical webs of the channel frames 36 until they enter the holes 60 and are forced outwardly by the springs 62, locking the trailer body on the turntable 12.

To unlock the latching pins 58 for removal of the trailer body from the railway car, a cable harness 66 is

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provided. This harness 66 includes a pair of legs 66a attached to the inner ends of the two latching pins 58. These legs are respectively trained on a pair of pulleys 68 rotatably supported near the center of the turntable 12 and down through an opening in the center of the turntable, through the bushing 24 and through an opening 26a in the channel 26. The two legs 66a are connected to a unitary center section 66b of the cable harness which is trained on a pulley 70 rotatably supported on a bracket 72 secured to the under surface of the channel 26. The cable 66b extends forwardly from the pulley 70 and is joined to a pair of legs 66c which extend to opposite sides of the railway car where they are trained on pulleys 74, extend through openings in the side frames 16 of the railway car, and are attached to operating handles 76 at either side of the car (see Figure 3). Pulling either one of the two handles 76 causes both of the two latching pins 58 to be retracted against the resistance of the spring 62, freeing the trailer body 40 for longitudinal movement on the rails 34 of the turntable 12.

The highway wheel assembly, which is generally designated 80 in Figures 1, 7 and 8, is provided with a pair of longitudinal rails 82 (see particularly Figure 7) which are of the same general shape as the rails 34 on the turntable 12. These rails 82 are adapted to fit within the channel frames 36 of the trailer body 40 and support the same against lateral and tipping movement while permitting longitudinal sliding movement of the trailer body relative to the highway wheel assembly 80. The highway wheel assembly is so constructed that the height of the rails 82 above the ground is approximately equal to the height of the rails 34 on the turntable 12 of the railway car 10 above the tops of the cross ties when the railway car is supported on conventional railway rails. To achieve this equality of height, it may be desirable, but it is by no means necessary, to use a special railway car of height less than that of conventional railway flat cars, so as to reduce the height of the highway wheel assembly and lower the center of gravity of the trailer body 40 when carried over the highways.

When the highway wheel assembly 80 is placed at one side of the railway car 10 and at the longitudinal center thereof, as shown in Figure 1, the rails 82 on the highway wheel assembly 80 are substantially colinear with the rails 34 on the turntable 12 of the railway car so that the trailer body 40 may be pushed off of the highway wheel assembly and onto the railway car with a minimum of effort. The outward flaring of the end portions of the channel frames 36 of the trailer body, described hereinabove, helps to guide the trailer body laterally onto the rails 34 of the turntable. To assist in guiding the channel frames 36 vertically onto the rails 34 of the turntable, the forward ends of the upper horizontal flanges of rails 34 are sloped downwardly, as indicated at 34a in Figure 4, and the upper and lower horizontal flanges of the channel frames 36 are flared outwardly, as indicated at 36a in Figure 4. This flaring will accommodate a difference of up to approximately six inches in the heights of the highway wheel assembly and the railway car, and make it possible to effect a transfer of the trailer body 40 to or from a railway car under varying conditions, making it unnecessary that the ground at either side of the track be paved or otherwise specially prepared.

The trailer body 40 is held in proper position on the highway wheel assembly 80 by means of latching pins 84 (Figures 1 and 7) which project through openings in the vertical webs of the rails 82 of the highway wheel assembly into selected pairs of a series of holes 86 (Figure 8) in the vertical webs of the channel frames 36 of the trailer body. The latching pins 84 are urged outwardly by means of coil springs 88 (Figure 7) which encircle the shanks of the latching pins 84 and which are compressed between tabs 90 projecting upwardly from the lower flanges of the rails 82 and collars 92 fixed on the latching pins 84. When the trailer body 40 is moved

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longitudinally of the highway wheel assembly 80, the outer ends of the latching pins 84 slide along the inner surfaces of the vertical webs of the channel frames 36 until they enter into one pair of the series of holes 86 therein, locking the trailer body longitudinally on the highway wheel assembly 80. The forward ends of the channel frames 36 are flared outwardly, as shown at 36b in Figure 1, to guide the trailer body laterally onto the highway wheel assembly and to cam the ends of the latching pins 84 inwardly as the trailer body is pulled onto the highway wheel assembly.

To unlock the latching pins 84 for removal of the trailer body 40 from the highway wheels 80, a pair of operating handles 94 are provided, one at either side of the frame 96 of the highway wheel assembly 80. Each of these handles 94 is connected to both of the latching pins 84 by means of a cable harness 98 which is trained around pairs of pulleys 100 and 102 and spaced along the centerline of the frame 96.

To hold the highway wheel assembly 80 against the side of the railway car 10 as the trailer body 40 is pulled from the railway car onto the highway wheel assembly, a pair of latching hooks 104 are provided at the rear end of the highway wheel assembly cooperating with a pair of bail members 106 (Figures 1 and 4) fixed on each side rail 16 of the railway car. The latching hooks 106 are pivotally mounted on pins 108 (Figure 4) extending between the upper and lower flanges of longitudinal channel members 110 secured beneath the frame 96 of the highway wheel assembly. The latching hooks 104 are urged into engagement with the bails 106 by means of coil springs 112 compressed between the forwardly extending portions of the latching hooks and the inner surfaces of the vertical webs of the channels 110.

When the highway wheel assembly 80 is backed up against the side of the railway car 10, the beveled outer ends of the latches 104 engage the bails 106, camming the latches inwardly against the resistance of the springs 112 until the hooked heads of the latches enter the bails and spring outwardly into locking position. This prevents the highway wheel assembly 80 from moving away from the railway car 10 as the trailer body 40 is slid off of the rails 34 of the turntable 12 onto the rails 32 of the highway wheel assembly.

To release the latching hooks 104, a pair of handles 114 (Figure 7) are provided, one at either side of the frame 96 of the highway wheel assembly. These handles are connected to the forward ends of the latching hooks 104 by means of a cable harness 116 which is trained around pulleys 118 (Figure 1) and 120 (Figure 7). Pulling either one of the two handles 114 retracts both of the two latching hooks 104 to permit the trailer body 40 to be moved longitudinally to permit the highway wheel assembly to be moved away from the side of the railway car after the trailer body has been placed in proper position on the highway wheel assembly.

The elongated bails 106 will be engaged by the latching hooks 104 over a considerable range of difference in height between the highway wheel assembly and the railway car, thereby contributing to the tolerance of the apparatus for uneven terrain at the point of transfer.

To support the front end of the trailer body 40 and hold it against movement on the railway car during transit, there is provided at the top of the railway car near its forward end a latching assembly which is generally designated 120 (Figure 1) and which is shown in greater detail in Figures 5 and 6. This latching assembly 120 comprises a frame 122 which has at its upper surface a transverse slot 124 for receiving a conventional king pin 126 which depends from the forward end of the trailer body 40 (see also Figure 8).

To allow adjustment of the longitudinal position of the latching assembly 120 to accommodate trailer bodies of different lengths, the latching assembly is slidably supported in a pair of parallel slide channels 128 which

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extend longitudinally of the car 10 along its front end portion, and are supported on the end rail 130 at the front of the car and on a transverse framing member 132. The longitudinal position of the latching assembly 120 is adjusted by means of a lead screw 134 which is rotatably journaled in bearings 136 and 138 respectively mounted on the end rail 130 and on the transverse framing member 132. The lead screw 134 extends through the frame 122 of the latching assembly and threadably engages a nut 140 integrally formed on the lower portion of the frame 122. Fixed on the forward end of the lead screw 134 for convenient rotation thereof is a crank 142. Rotation of the crank 142 causes the latching assembly 120 to move longitudinally of the slide channels 128 to the proper position for receiving the king pin 146 of the trailer in the transverse slot 124.

As may be seen in Figure 5, the latching assembly 120 is located at such a height that the bottom surface 144 of the slot 124 supports the lower end of the king pin 126 of a trailer supported in level position on the turntable 12 of the car. In order to raise the front end of the trailer body in the event that it tips downwardly due to unequal distribution of the load in the trailer body, the bottom 144 of the slot 124 is arched upwardly at the center and slopes downwardly at either side, and a pair of inclined ramp plates 146 are provided, one at either side of the latching assembly. These ramp plates 146 extend upwardly from the side frames 16 of the railway car and their inner edges terminate adjacent to and at approximately the same level as the bottom 144 of the transverse slot 124. If the king pin 126 of the trailer body 140 strikes one of the ramps 146 as the trailer body is being rotated into alignment with the railway car, the king pin 126 will ride up the ramp plate 146 and onto the bottom 144 of the slot 124, leveling the trailer body.

To provide for the other possibility that the forward end of the trailer may be too high due to improper load distribution, there is provided at the top of the railway car 10 near its rear end, as shown in Figure 1, a transverse supporting bar 148, which extends the entire width of the car. Its central portion is flat and is at such a level as to support the channel frames 36 of the trailer body 40 when the trailer body is in level position on the turntable 12. The side portions 148a of the rail 148 slope downwardly, so that if the rear end of the trailer body is too low as the trailer body is swung around into alignment with the railway car, one of the inclined portions 149a will engage the adjacent channel frame 36 of the trailer body and raise the rear end of the trailer body into level position, lowering the king pin on its front end against the bottom 144 (Figure 5) of the slot 124 in the latching assembly 120. The supporting bar also assists in supporting the trailer body on the railway car during transit.

To secure the trailer 40 in proper rotational position on the railway car 10 for transit, a pair of latch members 150 (Figures 1, 5 and 6) are provided in the latching assembly 120. These latch members are fixed on rock shafts 152 which are rotatably mounted in the frame 122 of the latch assembly. The latch members 150 are urged forwardly into the slot 124 of the latching assembly by coil springs 154 which are compressed between the rear edges of the latch members 150 and tabs 156 which depend from the upper portion of the frame 122.

As best shown in Figure 1, the latch members 150 are spaced apart so as to receive between their opposed inner edges the king pin 126 of the trailer body 40. The outer edges of the latching members 150 are inclined so that as the trailer body is swung around on the turntable 12, the king pin 126 will engage the inclined outer surface of one or the other of the latch members 150 and cam it inwardly against the resistance of the spring 154 until the trailer body 40 reaches the position of alignment with the long axis of the railway car 10, at which

position the latch member 150 will snap back outwardly under the influence of the spring 154 to lock the king pin 126 between the two latch members.

For releasing either one of the two latch members 150, there are provided a pair of handles 158 (Figures 1 and 5) fixed at the outer ends of lever arms 160 which are pinned to the lower ends of the rock shafts 152 and extend through the side rails 16 of the railway car. Forward movement of one of the handles 158, as indicated in broken lines in Figure 1, rotates its rock shaft 152 and moves the adjacent one of the latch members 150 rearwardly out of the slot 124, freeing the king pin 126 for rotation of the trailer body 40 on the turntable 12.

The several structures of the system are so constructed and interrelated that the transfer of the trailer body 40 from the highway wheel assembly 30 to the railway car 10 and vice versa may be made very quickly and easily. For example, assume that the trailer body has been towed on the highway wheel assembly to the rail side. The truck driver backs the trailer up against the side of the railway car, which may be an intermediate car in a train. The turntable 12 of the railway car is turned to the transverse position, as shown in Figure 1, and is automatically latched and held by engagement of the latch pin 46 (Figure 3) with one of the two latch receiving members 44. With the trailer aligned with the center of the railway car, as shown in Figure 1, the driver backs up the trailer until the latches 104 on the highway wheel assembly 80 engage the bails 106 on the side of the railway car. Then one of the two handles 94 is pulled to retract the latching pins 84 and free the trailer body for longitudinal movement on the highway wheel assembly 80. The driver then backs up his tractor, pushing the trailer body rearwardly on the highway wheel assembly and causing the channel frames 36 of the trailer body to slide onto the rails 34 on the turntable 12. When the ends 36c (Figure 8) of the lower flanges of the channel frames 36 clear the rails 82 on the highway wheel assembly the highway wheel assembly will be separated from the trailer body.

The driver continues backing up until the latching pins 58 on the rails 34 (Figures 1 and 2) snap into position in the holes 60 (Figure 8) in the channel frames 36 of the trailer body. The fifth wheel of the truck tractor is then released from the king pin 126 (Figure 8) of the trailer body 40 and the truck tractor is driven away. The trailer body 40 is now balanced on the turntable 12.

The handle 54 (Figures 1 and 3) at one side of the railway car 10 is then pulled to withdraw the latching pin 46 (Figure 3) and free the turntable for rotation. With latching assembly 120 adjusted to accommodate the length of the particular trailer body being loaded, the trailer body 40 is "walked" around until the king pin 126 enters into the slot 124 of the latching assembly 120 and is engaged between the latch members 150, locking the trailer body in position on the railway car. The ramp plates 146 and the supporting bar 148 assist in achieving proper horizontal alignment of the trailer body relative to the railway car so that the enlarged head of the king pin 126 will be engaged beneath the latching members 150 as shown in Figure 5. The trailer body is now fixed on the railway car for transit.

When it is desired to transfer the trailer body from the railway car to a highway wheel assembly, the highway wheel assembly is backed up against the side of the railway car to cause engagement of the latches 104 at the rear of the highway wheel assembly with the bails 106 on one side of the railway car. Then the appropriate one of the two handles 158 is moved forwardly, as shown in broken lines in Figure 1, to release the latch member 150 on that side, and one of the two handles 54 is pulled to free the turntable 12 and permit the trailer body 40 to be swung around to the point where the latching pin 46 (Figure 3) will enter into one of the two latch re-

ceiving members 44, stopping the turntable with the trailer body centered above the highway wheel assembly. Then the truck tractor is backed up to engage the king pin 126 (Figure 8) in the fifth wheel of the truck tractor. One of the handles 76 (Figure 3) is pulled to retract the latching pins 58 (Figures 1 and 2) from the channel frames 36 of the trailer body, and the truck tractor is driven forward. This pulls the trailer body 40 onto the highway wheel assembly with the channel frames 36 of the trailer body sliding over the rails 82 of the highway wheel assembly, as shown in Figure 7. The truck tractor continues to be driven forwardly until the latching pins 84 (Figures 1 and 7) enter into the most forward pair of holes 86 (Figure 8) in the channel frames 36 of the trailer body. If it is desired to position the highway wheel assembly further rearward relative to the trailer body 40, one of the two handles 94 (Figures 1 and 7) is pulled to retract the latching pins 84 and permit the trailer body to be moved further forward until the latching pins enter into the desired pair of holes 86, at which point the trailer body 40 is locked on the highway wheel assembly 80 and ready for transit. One of the two handles 114 (Figure 7) is then pulled to retract the latching hooks 104, freeing the highway wheel assembly from the side of the railway car 10 and permitting the highway truck and trailer to be driven away.

From the foregoing description it will be apparent that the present invention provides a system which permits ready transfer of loaded trailer bodies between highway trucks and railway cars without the use of any extraneous equipment such as cranes or fork lift trucks, and which is so constructed that the transfer may be made to or from either side of the railway car quickly, easily and with little labor.

Figure 9 shows an alternative construction of highway wheel assembly which includes a frame having longitudinal side rails 162 which extend almost the full length of the trailer body 40, which is shown in broken lines in Figure 9. These longitudinal rails 162, like the rails 82 of the highway wheel assembly 80 shown in Figure 7, are adapted to be received within the channel frames 36 of the trailer body 40, permitting longitudinal movement of the trailer body relative to the highway wheel assembly while holding the trailer body against lateral or tipping movement.

The wheel assembly shown in Figure 9 is provided with latching pins 164 which are adapted to enter the holes 60 (Figure 8) in the channel frame 36 in the trailer body 40 and hold the trailer body against longitudinal movement on the wheel assembly. Handles 166 are provided for withdrawing the latching pins 164 to permit the trailer body 40 to be moved longitudinally of the wheel assembly. The wheel assembly shown in Figure 9 is provided at its forward end with a king pin 126 which is adapted to be engaged by the fifth wheel of the truck tractor (instead of the king pin 126 on the trailer body) for pulling the wheel assembly and the trailer body thereon.

For moving the trailer body 40 longitudinally relatively to the wheel assembly, for example for transfer of the trailer body to a railway car, a motor 168 (Figure 9) is provided. For example, this may be an air motor powered by a compressor in the truck tractor. The motor is coupled by means of a belt 170 with a pulley 172 fixed on a shaft 174 rotatably supported between the longitudinal rails 162 of the wheel assembly. Also fixed on the shaft 174 is a pinion 176 which meshes with a rack 178 extending along the center of the trailer body 40 at the bottom thereof. The motor 168 drives the pinion 176, causing it to move the trailer body longitudinally of the wheel assembly to transfer the trailer body to a railway car of the general type described hereinabove, or to remove it therefrom. This arrangement shown makes it unnecessary to move the truck tractor during the trans-

fer of the trailer body to or from the railway car and enables a still further reduction in the manpower required to effect the transfer.

From the foregoing description it will be appreciated that the aforementioned and other desirable objectives have been achieved. However, it should be emphasized that the particular embodiments of the invention which are shown and described herein are intended as merely illustrative of the principles of the invention, rather than as restrictive of the scope thereof, and that various modifications may be made in these specific employments without departing from the spirit of the invention, or from the coverage of this patent, which is limited only by the appended claims.

I claim:

1. In a railway car, a turntable mounted at the top of said car for rotation in a horizontal plane, a pair of spaced, parallel support members mounted on said turntable for longitudinally slidable, laterally interlocking engagement with a pair of spaced, parallel frame members extending longitudinally and along the bottom of a trailer body, and a latch assembly mounted at the top of said car and at a substantial distance from the axis of said turntable for releasable engagement with a king pin projecting downwardly from the forward end of said trailer body, said latch assembly having a channel extending transversely thereof and open at both sides for receipt of said king pin from either side, latch means movable into said channel for engagement with said king pin, and spring means urging said latch means into said channel, said latch means being provided at each side with inclined cam surfaces for engagement by said king pin to cam said latch means out of said channel and permit said king pin to enter behind and be engaged by said latch means.

2. In a railway car, a turntable mounted at the top of said car for rotation in a horizontal plane, a pair of spaced, parallel rail members mounted on said turntable for longitudinally slidable, laterally interlocking engagement with a pair of spaced, parallel rail members extending longitudinally and along the bottom of a trailer body, a latch assembly mounted at the top of said car and at a substantial distance from the axis of said turntable for releasable engagement with a king pin projecting downwardly from the forward end of said trailer body, and said latch assembly having a channel extending transversely thereof and open at both sides for receipt of said king pin from either side, a pair of latch members pivotally mounted for movement into and out of said channel for engagement with opposite sides of said king pin, spring means urging said latch members into said channel, said latch members having inclined outer surfaces for engagement with said king pin as it moves into said channel to cam said latch members out of said channel and permit said king pin to enter between said latch members.

3. In a railway car, a turntable mounted at the top of said car for rotation in a horizontal plane, a pair of spaced, parallel support members mounted on said turntable for longitudinally slidable, laterally interlocking engagement with a pair of spaced, parallel frame members extending longitudinally and along the bottom of a trailer body, a latch assembly mounted on top of said car and near one end thereof for engagement with a king pin projecting downwardly from the forward end of said trailer body, said latch assembly having a channel extending transversely thereof and open at both sides for receipt of said king pin from either side, latch means movable into said channel for engagement with said king pin, and spring means urging said latch means into said channel, said latch means being provided at each side with inclined cam surfaces for engagement by said king pin to cam said latch means out of said channel and permit said king pin to enter behind and be engaged by said latch means, and a pair of latch releasing linkages, each mechanically connected to one of said latch members for moving it out of said channel, and respectively including operating handles

positioned at opposite sides of the same end of said car.

4. In a railway car for carrying highway trailer bodies, a turntable mounted at the top of said car for rotation in a horizontal plane, a pair of spaced, parallel rail members mounted on said turntable for longitudinally slidable, laterally interlocking engagement with a pair of spaced, parallel rail members extending longitudinally and along the bottom of the trailer body, a latch assembly mounted at the top of said car and at a substantial distance from the axis of said turntable for releasable engagement with a king pin projecting downwardly from the forward end of said trailer body, said latch assembly having a channel extending transversely thereof and open at both sides for receipt of said king pin from either side, latch means movable into said channel for engagement with said king pin, and spring means urging said latch means into said channel, said latch means being provided at each side with inclined cam surfaces for engagement by said king pin to cam said latch means out of said channel and permit said king pin to enter behind and be engaged by said latch means, inclined ramps at either side of said latch assembly for engaging and lifting the forward end of said trailer body as said trailer body is rotated on said turntable, if the forward end of said trailer body is lower than the rearward end, and a transversely extending support mounted at the top of said car or the opposite side of said turntable from said latch assembly for supporting the rear end portions of the rails at the bottom of said trailer, said support having inclined portions at either side for engaging and lifting the rearward end of said trailer body as said trailer body is rotated on said turntable, if the rearward end is lower than the forward end.

5. In a railway car for carrying highway trailer bodies, a turntable mounted at the top of said car for rotation in a horizontal plane, a pair of spaced, parallel support members mounted on said turntable for longitudinally slidable, laterally interlocking engagement with a pair of spaced, parallel frame members extending longitudinally and along the bottom of the trailer body, a latch assembly mounted at the top of said car and at a substantial distance from the axis of said turntable for releasable engagement with a king pin projecting downwardly from the forward end of said trailer body, said latch assembly having a channel extending transversely thereof and open at both sides for receipt of said king pin from either side, latch means movable into said channel for engagement with said king pin, and spring means urging said latch means into said channel, said latch means being provided at each side with inclined cam surfaces for engagement by said king pin to cam said latch means out of said channel and permit said king pin to enter behind and be engaged by said latch means, a pair of latch portions at diametrically opposite positions on said turntable, a spring biased latch member mounted on said car for engagement with said latch portions when said turntable is oriented to place said trailer body perpendicular to the long axis of said car, and a pair of latch releasing linkages, each connected to one of said latch members for moving the same out of engagement with said latch portion, said linkages being provided with operating handles at opposite sides of said car.

6. In a freight handling system, in combination, a trailer body having at its bottom a pair of spaced, parallel, longitudinally extending frame members, a king-pin extending downwardly from the bottom of said trailer body near its forward end, a highway wheel assembly having at its top a pair of spaced, parallel, longitudinally extending rails for longitudinally slidable, laterally interlocking engagement with the frame members on said trailer body, means for releasably locking said highway wheel assembly in a predetermined longitudinal position beneath the rearward portion of said highway wheel assembly, a highway tractor having a fifth wheel for piv-

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otal engagement with said kingpin for movement of said trailer body and said highway wheel assembly in semi-trailer fashion, a railway car having at its top a turntable mounted for rotation in a horizontal plane, a pair of spaced, parallel rail members mounted on said turntable for longitudinally slidable, laterally interlocking engagement with the frame members on said trailer body, whereby with said turntable turned to orient said rail members transversely of said railway car and with said highway wheel assembly standing stationary at one side of said railway car, with the rails on said highway wheel assembly aligned both vertically and horizontally with the rail members on said turntable, said trailer body may be pushed or pulled by said tractor to cause it to slide longitudinally from said turntable onto said highway wheel assembly and vice versa, and means for releasably securing said trailer body against movement on said railway car.

7. In a freight handling system, in combination, a trailer body having at its bottom a pair of spaced, parallel, longitudinally extending frame members, a kingpin extending downwardly from the bottom of said trailer body near its forward end, a highway wheel assembly having at its top a pair of spaced, parallel, longitudinally extending rails for longitudinally slidable, laterally interlocking engagement with the frame members on said trailer body, means for releasably locking said highway wheel assembly in a predetermined longitudinal position beneath the rearward portion of said highway wheel assembly, a highway tractor having a fifth wheel for pivotal engagement with said kingpin for movement of said trailer body and said highway wheel assembly in semi-trailer fashion, a railway car having at its top a turntable mounted for rotation in a horizontal plane, a pair of spaced, parallel rail members mounted on said turntable for longitudinally slidable, laterally interlocking engagement with the frame members on said trailer body, whereby with said turntable turned to orient said rail members transversely of said railway car and with said highway wheel assembly standing stationary at one side of said railway car, with the rails on said highway wheel assembly aligned both vertically and horizontally with the rail members on said turntable, said trailer body may be pushed or pulled by said tractor to cause it to slide longitudinally from said turntable onto said highway wheel assembly and vice versa, means for releasably locking said trailer body in a predetermined longitudinal position on said turntable, and means for re-

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leasably securing said trailer body and said turntable against rotation relative to said railway car.

8. In a freight handling system, in combination, a trailer body having at its bottom a pair of spaced, parallel, longitudinally extending frame members, a kingpin extending downwardly from the bottom of said trailer body near its forward end, a highway wheel assembly having at its top a pair of spaced, parallel, longitudinally extending rails for longitudinally slidable, laterally interlocking engagement with the frame members on said trailer body, means for releasably locking said highway wheel assembly in a predetermined longitudinal position beneath the rearward portion of said highway wheel assembly, a highway tractor having a fifth wheel for pivotal engagement with said kingpin for movement of said trailer body and said highway wheel assembly in semi-trailer fashion, a railway car having at its top a turntable mounted for rotation in a horizontal plane, a pair of spaced, parallel rail members mounted on said turntable for longitudinally slidable, laterally interlocking engagement with the frame members on said trailer body, whereby with said turntable turned to orient said rail members transversely of said railway car and with said highway wheel assembly standing stationary at one side of said railway car, with the rails on said highway wheel assembly aligned both vertically and horizontally with the rail members on said turntable, said trailer body may be pushed or pulled by said tractor to cause it to slide longitudinally from said turntable onto said highway wheel assembly and vice versa, means for releasably locking said trailer body in a predetermined longitudinal position on said turntable, and means on the upper surface of said railway car for releasably engaging said kingpin when said turntable is turned to orient said trailer body parallel to said railway car to prevent rotation of said trailer body and turntable relative to said railway car.

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