Dec. 29, 1964 S. H. ENOCHIAN 3,163,128

MULTI-PURPOSE RAILWAY CARS OF THE PIGGYBACK TYPE INCORPORATING IMPROVED HAND BRAKE MECHANISMS

Filed Aug. 23, 1963 4 Sheets-Sheet 1

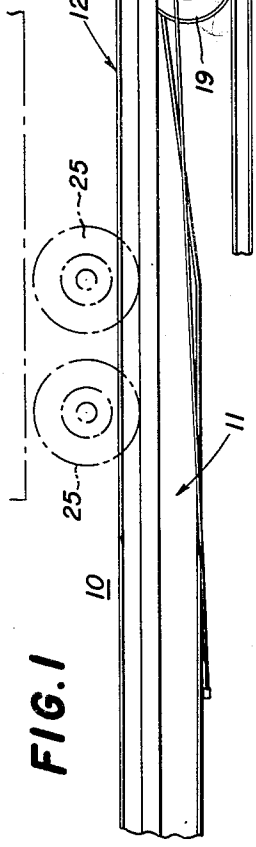


FIG. 1

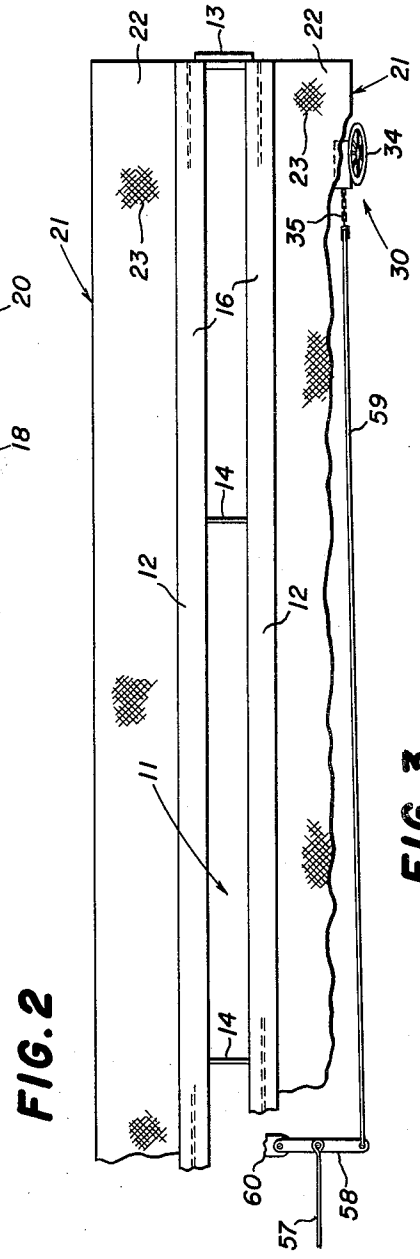


FIG. 2

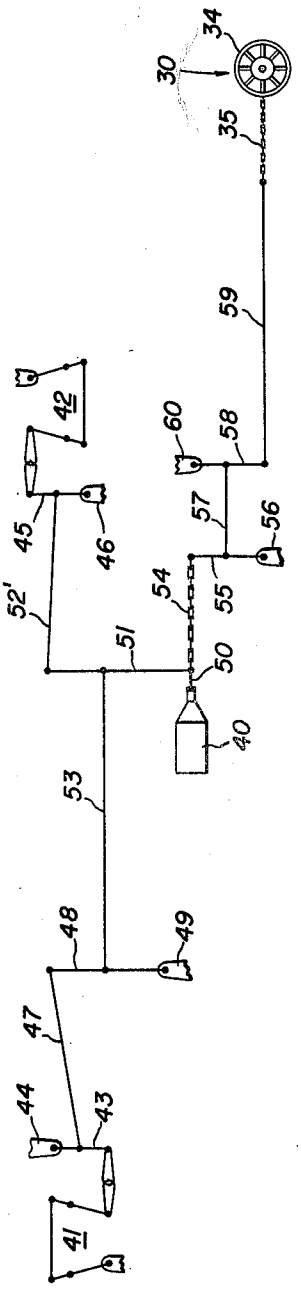


FIG. 3

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FIG. 4

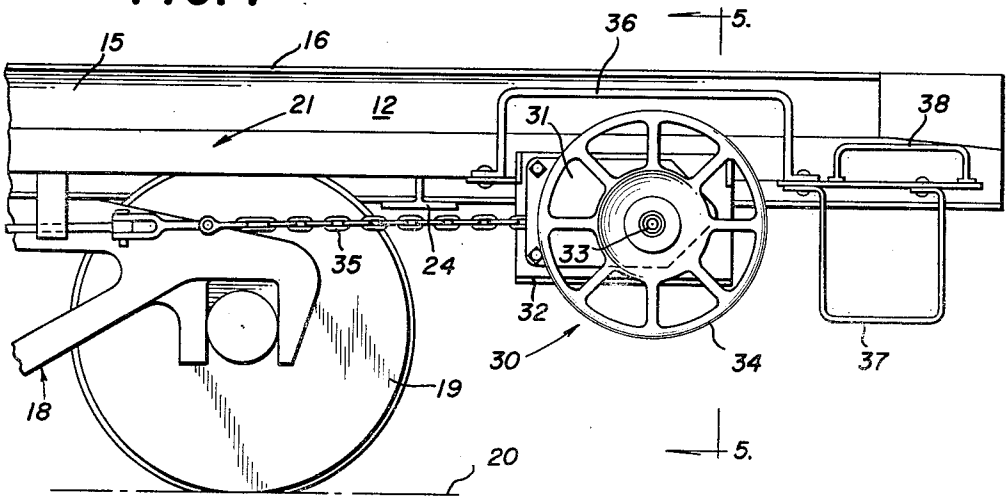
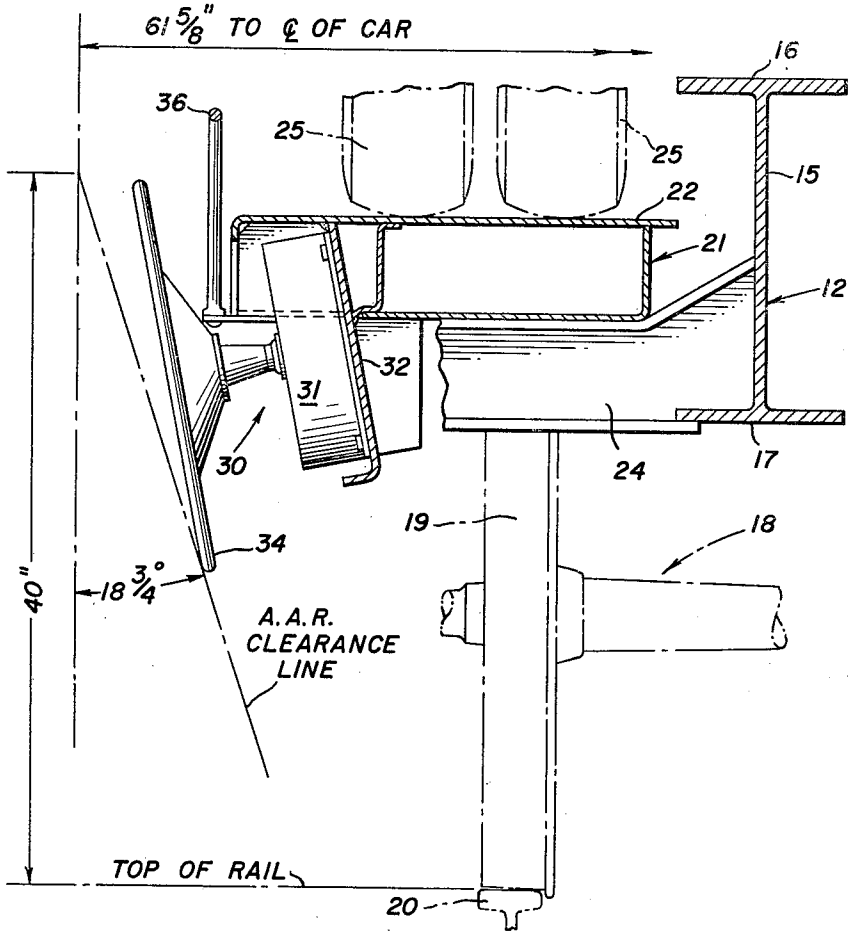

15
16
36
5.
21
12
31
38
35
24
33
32
30
34
37
18
19
20
5.

FIG. 5


61 5/8" TO ℄ OF CAR
16
36
25
25
15
22
21
12
32
31
30
24
17
19
18
34
3°
40"
18 3/4
A.A.R.
CLEARANCE
LINE
TOP OF RAIL
20

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FIG. 6

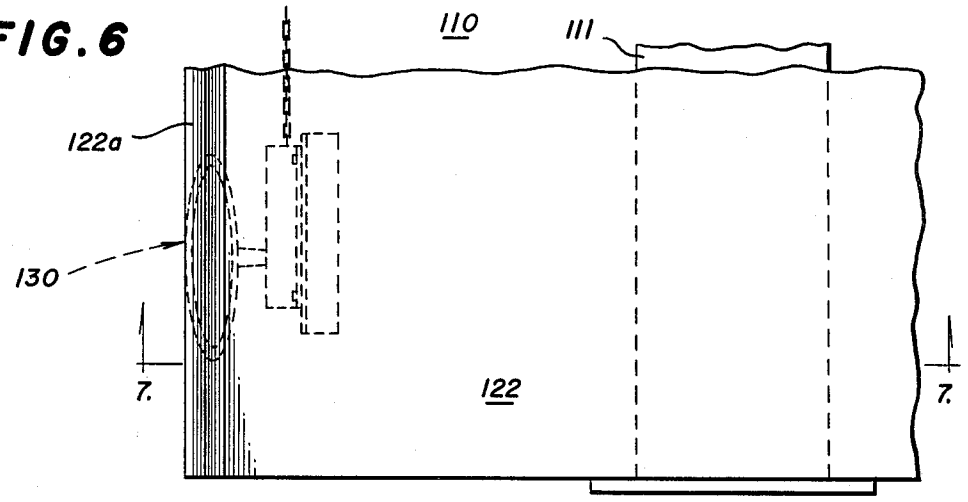
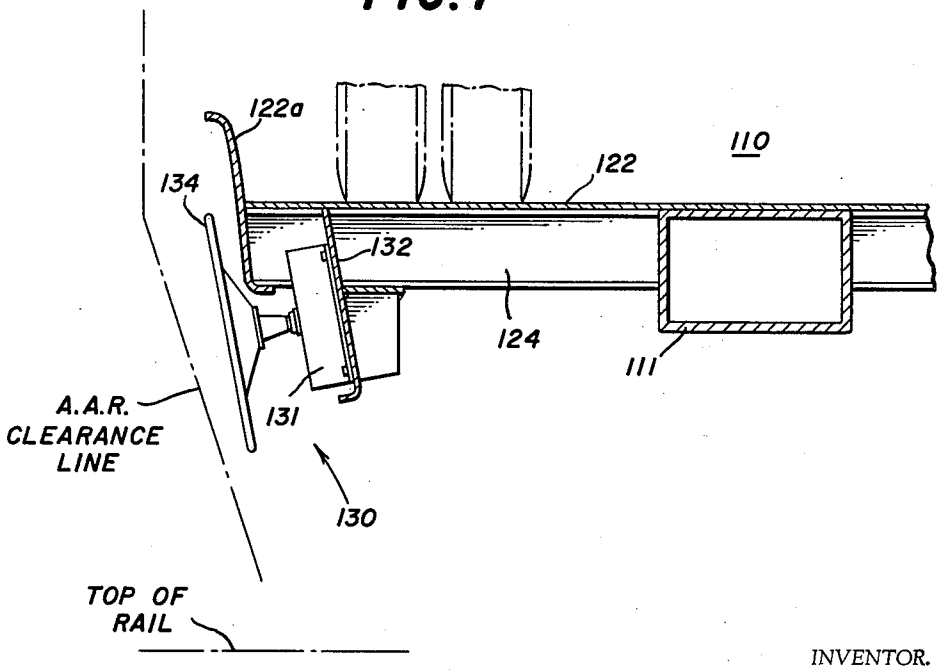


FIG. 7



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FIG. 8

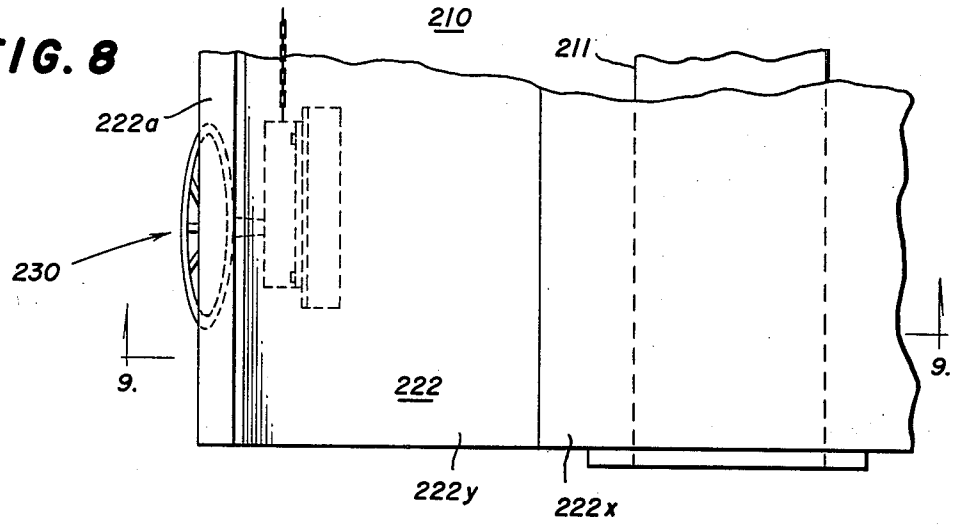
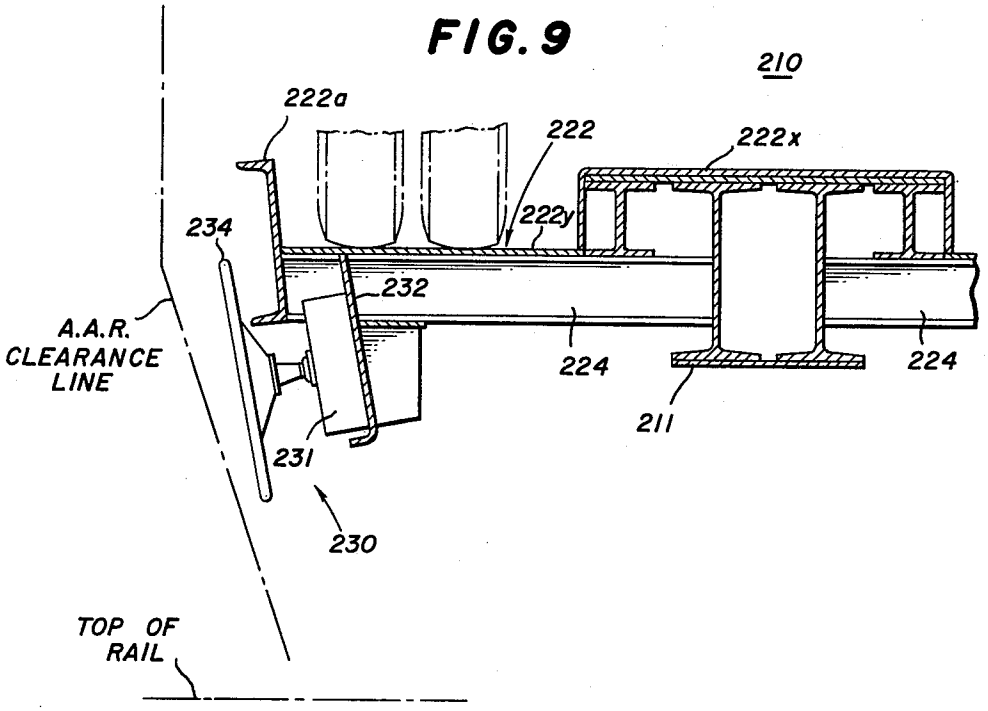


FIG. 9



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United States Patent Office 3,163,128 Patented Dec. 29, 1964

3,163,128

MULTI-PURPOSE RAILWAY CARS OF THE PIGGY-BACK TYPE INCORPORATING IMPROVED HAND BRAKE MECHANISMS

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Filed Aug. 23, 1963, Ser. No. 304,092
11 Claims. (Cl. 105—368)

The present invention relates to multi-purpose railway cars of the piggyback type, and more particularly to such railway cars incorporating an improved arrangement and disposition of the hand brake mechanisms thereof, so as to prevent interference by the hand brake mechanisms with various loading and unloading operations employed in conjunction with the railway cars.

In the copending application of Deodat Clejan, Serial No. 237,201, filed November 13, 1962, now Patent No. 3,143,978 granted August 11, 1964, there is disclosed a railway car of the piggyback type that comprises an elongated longitudinally extending narrow beam having a length between the opposite ends thereof in excess of about 85 feet, a pair of wheeled trucks respectively supporting the opposite ends of the beam, and a pair of elongated longitudinally extending and laterally spaced-apart treadways respectively carried by the opposite sides of the beam. The top of the beam defines an elongated longitudinally extending centrally disposed substantially horizontal narrow platform; and the pair of treadways are positioned in a substantially horizontal plane loaded below the top of the platform. The platform is adapted to support two freight containers mounted in tandem relation on top of the beam; and the pair of treadways are adapted respectively to support the laterally spaced-apart road wheels of each of two road semi-trailers mounted in tandem relation on top on the beam. The longitudinal distance between the opposite ends of the platform is at least 85 feet and the lateral distance between the opposite outer sides of the platform is about 40 inches. The longitudinal distance between the opposite ends of each of the treadways is at least about 85 feet; the lateral distance between the opposite outer sides of the treadways is at least about 100 inches; and the vertical distance between the top of the platform and the plane of the top of the treadways disposed therebelow is not substantially greater than about 8 inches so as to prevent interference by the platform with the underframe of a road semi-trailer mounted on top of the beam.

In the use of this railway car, the road semi-trailers and the containers are both loaded and unloaded with respect to the top of the beam by a variety of freight handling systems involving end-handling, side-handling and overhead-handling; whereby, heretofore, no really satisfactory location has been found for the hand brake mechanism for controlling the braking mechanisms respectively incorporated in the wheeled trucks respectively suporting the opposite ends of the beam, so that the hand brake mechanism does not seriously interfere with the loading and unloading operations involved in one of the freight handling systems mentioned.

Accordingly, it is a general object of the invention to provide in a railway car of the piggyback type, an improved disposition and arrangement of the hand brake mechanism, wherein it is convenient and readily accessible, wherein the same does not interfere in any way with loading and unloading operations involved in any of the known systems of freight-handling, and wherein the same is within the A.A.R. clearance line for the car.

Another object of the invention is to provide an arrangement of the hand brake mechanism of the character described, wherein the same is carried by one side of the frame of the railway car adjacent to one end thereof and disposed below the adjacent side of the deck of the railway car and positioned laterally inwardly of the adjacent outer side of the deck, wherein the hand brake mechanism includes a manually operable hand wheel projecting laterally outwardly therefrom and positioned closely adjacent to and laterally outwardly of the adjacent outer side of the deck, and whereby the hand wheel may be readily operated by a brakeman either from a position on top of the adjacent side of the deck or from a position on the ground.

A further object of the invention is to provide an arrangement of the hand brake mechanism of the character described, wherein all of the elements of the railway car and all of the parts carried by the frame thereof, and including the hand wheel, are arranged laterally inwardly, so that no one of them projects beyond the A.A.R. clearance line for the railway car, notwithstanding the great width of the deck of the railway car.

A still further object of the invention is to provide a multi-purpose railway car of the piggyback type that is adapted to transport simultaneously two road semi-trailers, or two freight containers, or one road semi-trailer and one freight container, and comprising an improved arrangement and location of the hand brake mechanism, so as to prevent any interference whatsoever with loading and unloading operations involved in any known freight-handling system that may be used in conjunction with the railway car.

Further features of the invention pertain to the particular arrangement of the elements of the railway car, whereby the above-outlined and additional operating features thereof are attained.

The invention, both as to its organization and method of operation, together with further objects and advantages thereof, will best be understood by reference to the following specification, taken in connection with the accompanying drawings, in which:

FIGURE 1 is a fragmentary side elevational view of the railway car of the piggyback type incorporating an arrangement and location of hand brake mechanism embodying the present invention;

FIG. 2 is a fragmentary plan view, partly broken away, of the railway car, as shown in FIG. 1;

FIG. 3 is a diagrammatic illustration of the brake rigging and the hand brake mechanism that are incorporated in the railway car, as shown in FIGS. 1 and 2;

FIG. 4 is an enlarged side elevational view of one end of the railway car, as shown in FIG. 1;

FIG. 5 is a greatly enlarged lateral vertical sectional view of one outer side of the railway car, this view being taken in the direction of the arrows along the line 5—5 in FIG. 4;

FIG. 6 is a fragmentary plan view of a modified form of the railway car;

FIG. 7 is a fragmentary lateral vertical sectional view of the railway car, this view being taken in the direction of the arrows along the line 7—7 in FIG. 6;

FIG. 8 is a fragmentary plan view of another modified form of the railway car; and

FIG. 9 is a fragmentary lateral vertical sectional view of the railway car, this view being taken in the direction of the arrows along the line 9—9 in FIG. 8.

Referring now to FIGS. 1 and 2 of the drawings, the railway car 10 there illustrated, and embodying the features of the present invention, is preferably of the general construction and arrangement of that disclosed in the previously mentioned copending application of Deodat Clejan; whereby the railway car 10 is of the multi-purpose piggyback type that is adapted to transport two road semi-

trailers mounted in tandem relation on the top thereof, or two freight containers mounted in tandem relation on the top thereof, or one road semi-trailer and one freight container mounted in tandem relation on the top thereof; which freight items may be loaded and unloaded from either end of the car 10 or from either side of the car 10 or from overhead of the car 10 employing a gantry crane, or the like; which freight-handling systems are well known and are not here particularly described in the interest of brevity.

Specifically, the railway car 10 essentially comprises an elongated longitudinally extending narrow beam 11 constituting a center sill, and including a pair of I-beams 12 extending longitudinally and arranged in laterally spaced-apart relation; the opposite ends of the I-beams 12 are tied together with a pair of striker plates 13; and the intermediate portions of the I-beams 12 are tied together by a plurality of laterally extending and longitudinally spaced-apart tie plates 14 arranged in upstanding positions. The beam 11 has a length between the opposite ends thereof in excess of 85 feet and a width between the opposite sides thereof of about 40 inches. As best shown in FIGS. 4 and 5, each of the I-beams 12 includes an upstanding web 15 and top and bottom flanges 16 and 17; and the top flanges 16 are arranged in a substantially horizontal upper plane to define a corresponding platform on the top of said beam 11. The opposite ends of the beam 11 are supported by two wheeled trucks 18; and the beam 11 is of fish-belly configuration, as best shown in FIG. 1. Each of the trucks 18 is of conventional construction, including track wheels 19 engaging the rails 20 of a cooperating railway track, as indicated in FIG. 1; and each of the trucks 18 incorporates the usual brake mechanism, not shown, including brake shoes cooperating with the individual track wheels 19. The trucks 18 are of standard rail gauge; whereby the beam 11 is located entirely between the planes of the inner sides of the track wheels 19, as clearly shown in FIG. 5.

The opposite sides of the beam 12 carry a pair of elongated longitudinally extending and laterally spaced-apart box-like structures 21, each including a top plate 22 constituting a treadway, the upper surface of which is provided with non-skid beads or formations, as indicated at 23 in FIG. 2. As best shown in FIG. 5, each of the structures 21 is suitably internally reinforced, so that it is of strong rigid construction. The pair of structures 21 are suitably supported upon a number of pairs of laterally extending side arms 24 carried by the opposite sides of the beam 12 and arranged in longitudinally spaced-apart relation. In the arrangement, the pair of treadways 22 are disposed in a substantially horizontally disposed lower plane and constitute a composite deck for the railway car. Each of the structures 21 has a length of at least about 85 feet; the lateral distance between the opposite outer sides of the treadways 22 is at least about 100 inches; the inner sides of the treadways 22 are disposed substantially below the outer side edges of the top flanges 16 of the adjacent I-beams 12; and the vertical distance between the upper plane of the tops of the top flanges 16 and the lower plane of the tops of the treadways 22 is about 8 inches.

The platform defined by the top flanges 16 of the I-beams 12 is adapted directly to engage and to support the bottom surfaces of the two freight containers that may be mounted in tandem relation on top of the beam 11; and the treadways 22 are adapted to engage and to support the laterally spaced-apart road wheels, indicated at 25 in FIGS. 1 and 5, of each of the two road semi-trailers that may be mounted in tandem relation on top of the beam 11. Also the beam comprises first hitch facility for securing in place the individual road semi-trailers, and second hitch facility for securing in place the individual freight containers, and cushioning facility for preventing the transmission of severe longitudinal shocks from the beam 11 to the individual hitch facilities; which

equipment forms no part of the present invention and has not been illustrated in the interest of brevity; however, such equipment is fully disclosed in the previously mentioned co-pending Clejan application and is hereby incorporated herein by reference for purposes of completeness.

Further, the railway car 10 comprises hand brake mechanism 30 of conventional construction and arrangement, and preferably of Equipco Type 375/0D, non-spin type of hand brake; which hand brake mechanism 30 is arranged and located in accordance with the present invention. Specifically the hand brake mechanism 30 is carried by one side of the beam 11 adjacent to one end thereof and disposed below the adjacent one of the treadways 22 and positioned laterally inwardly of the adjacent outer side of the one treadway 22, as shown in FIGS. 1, 2 and 3. More particularly, the hand brake mechanism 30 is located about 3 feet from the adjacent one end of the beam 11, as shown in FIGS. 1, 2 and 3; and as illustrated in FIG. 5, the casing 31 of the brake mechanism is directly secured to a mounting bracket 32 that is directly secured in place to the adjacent structure 21. Specifically, in order to conserve space, the mounting bracket 32 projects both upwardly into the adjacent hollow structure 21 and downwardly therebelow at a slight angle to the vertical; the casing 31 of the mechanism 30 is directly secured to the outer side of the mounting bracket 32; and the upper portion of the casing 31 projects up into the hollow structure 21, the top of the casing 31 being positioned just below the bottom surface of the adjacent plate constituting the treadway 22. The mechanism 30 comprises a rotatable operating shaft 33 that projects laterally outwardly from the casing 31 and is inclined downwardly due to the previously mentioned inclination of the mounting bracket 32 to the vertical; and the outer end of the operating shaft 33 carries a manually operable hand wheel 34. Thus, in the arrangement, the outer face of the hand wheel 34 is inclined inwardly at an angle to the vertical, due to the position of the mounting bracket 32, as previously noted. Moreover, the hand wheel 34 is positioned laterally outwardly of the adjacent outer side of the structure 21, as best shown in FIG. 5; and the extreme top of the hand wheel 34 projects only slightly upwardly above the top of the adjacent treadway 22. Accordingly, the hand wheel 34 may be readily operated by a brakeman either from a position on top of the adjacent treadway 22 or from a position on the ground; and the hand wheel 34 is in a non-interfering position with respect to loading and unloading operations involved in any of the known freight-handling systems and employing the road semi-trailers, the freight containers, and other freight items that may be transported upon the top of the beam 11.

Before proceeding with further description of the railway car 10, it is well to explain and to define the term "A.A.R. clearance line" that is involved in the construction and arrangement of the car 10. Fundamentally, the A.A.R. clearance line starts at a point disposed 61⅝" laterally outwardly from the longitudinal center line of the car 10 and 40" above the top of the heads of the rails 20, as clearly shown in FIG. 5; which line extends vertically upwardly from the point noted and which line extends downwardly and inwardly at an angle of 18¾° from the point noted. The line also has other boundary configurations toward the top thereof and toward the bottom thereof that are not here pertinent to the construction of the car 10. Now, every element and component of the railway car 10 must be located laterally inwardly of this A.A.R. clearance line in view of the extreme length of the beam 11 and in view of the extreme width of the deck defined by the two structures 21, or otherwise the same could not enter certain tunnels or make certain track curves involved in the network of American railways upon which the car 10 must be transported. More particularly, this specification of the A.A.R. clearance line has been assigned to the car 10 by the I.C.C.

and the same must conform thereto to be permitted interchange.

Accordingly, the hand wheel 34 of the hand brake mechanism 30 is also located and arranged entirely laterally inwardly of the A.A.R. clearance line, as shown in FIG. 5; whereby, the peculiar lateral inward mounting and inward and downward tilting of the casing 31 must be maintained so as to insure that the hand wheel 34 is disposed within the A.A.R. clearance line and is located so that it is readily accessible to the brakeman from the adjacent top side of the deck of the car 10.

Further, the hand brake mechanism 30 comprises an arbor, not shown, housed in the casing 31 and operatively geared to the operating shaft 33; which arbor carries a pull chain 35, the outer end of which extends to the exterior of the casing 31 through an opening provided therein. When the hand wheel 34 is manually rotated in the clockwise direction, the chain 35 is reeled into the casing 31, so as simultaneously to actuate the brake mechanism incorporated in the trucks 18 to apply the brake shoes to the track wheels 19; when the hand wheel 34 is manually rotated in the counterclockwise direction, the chain 35 is unreeled from the casing 31, so as simultaneously to actuate the brake mechanisms incorporated in the trucks 18 to release the brake shoes from the track wheels 19. The hand brake mechanism 30 is of the non-spin type, so that there is no creep of the chain 35 in an unreeling action after manual rotation of the hand wheel 34 to reel in the chain 35; whereby the hand wheel 34 must be manually rotated to unreel the chain 35, so as to effect the release of the brake shoes, as previously noted.

In order to protect the hand wheel 34 against any possible damage incident to loading and unloading operations, an inverted substantially U-shaped guard bar 36 is carried by the adjacent outer portion of the structure 21 and spanning the hand wheel 34 and positioned laterally inwardly with respect thereto, as shown in FIGS. 4 and 5. Also, the railway car comprises a step bar 37 and a hand bar 38 to facilitate climbing by the brakeman from the ground onto the deck, as shown in FIG. 4.

Referring to FIG. 3 the railway car 10 further comprises an air brake control system, only the main brake cylinder 40 of which is indicated, and brake rigging interconnecting the brake mechanisms, indicated at 41 and 42, and respectively incorporated in the trucks 18, and the hand brake mechanism 30 and the main brake cylinder 40. Specifically, the brake mechanism 41 is operatively connected to the free end of a link 43, the other end of which is pivoted to a fixed support 44; and likewise, the brake mechanism 42 is operatively connected to the free end of a link 45, the other end of which is pivoted to a fixed support 46. The intermediate portion of the link 43 is pivoted to one end of a bar 47 and the other end of the bar 47 is pivoted to the free end of a link 48, the other end of which is pivoted to a fixed support 49. The piston of the main brake cylinder 40 is connected to a piston rod 50 that is pivoted to one free end of a floating link 51; the other free end of the floating link 51 is pivoted to one end of a rod 52; and the intermediate portion of the floating link 51 is pivoted to one end of a rod 53. The other end of the rod 52 is pivoted to the intermediate portion of the link 45; and the other end of the rod 53 is pivoted to the intermediate portion of the link 48. Also, the piston rod 50 is connected by a chain 54 to the free end of a link 55, the other end of which is pivoted to a fixed support 56. The intermediate portion of the link 55 is pivoted to one end of a rod 57; the other end of the rod 57 is pivoted to the intermediate portion of a link 58; the free end of the link 58 is pivoted to a pull rod 59; and the other end of the link 58 is pivoted to a fixed support 60. The other end of the pull rod 59 is connected to the chain 35 forming a part of the hand brake mechanism 30, as previously described.

The piston of the main brake cylinder 40 normally occupies a retracted position; and the hand brake mechanism 30 normally occupies its release position; whereby the elements of the brake rigging occupy their positions, as illustrated in FIG. 3; with the result that the brake mechanisms 41 and 42 normally occupy their released positions, as illustrated in FIG. 3.

Now assuming that the brake mechanisms 41 and 42 are to be actuated into their braking positions by the air braking control system, the piston is expanded in the main brake cylinder 40 moving the piston rod 51 to the right, as viewed in FIG. 3. This movement of the piston rod 50 drives the lower end of the floating lever 51 toward the right, so as to effect movement of the rod 53 toward the right and movement of the rod 52 toward the left. Movement of the rod 53 toward the right effects corresponding movements of the lever 48 and the rod 47. Movement of the rod 47 toward the right effects corresponding movement of the lever 43 and the consequent actuation of the brake mechanism 41 into its set position; and movement of the rod 52 toward the left effects corresponding movement of the lever 45 and the consequent actuation of the brake mechanism 42 into its set position. In order to release the brake mechanisms 41 and 42, by the air braking system, the piston is contracted in the main brake cylinder 40, moving the piston rod to the left, and back into its normal position, as illustrated in FIG. 3; whereby reverse movements of the various elements 51, etc., take place, with the consequent actuation of the brake mechanisms 41 and 42 into their brake release positions.

Now assuming that the brake mechanisms 41 and 42 are to be actuated into their braking positions, by the hand brake mechanism 30, the hand wheel 34 is rotated in the clockwise direction; whereby the chain 35 is reeled into the casing 31, with the consequent pull upon the pull bar 59 and the resulting movement thereof toward the right, as viewed in FIG. 3. This movement of the pull bar 59 effects movement of the link 58 toward the right, so that the bar 57 moves toward the right to move the link 55 toward the right. This movement of the link 55 pulls on the chain 54 moving it and the piston rod 50 toward the right; whereby the other elements of the brake rigging are moved in the manner previously described; whereby the brake mechanisms 41 and 42 are actuated into their set positions. In order to release the brake mechanisms 41 and 42, by the hand brake mechanism 30, the hand wheel 34 is rotated in the counterclockwise direction; whereby the tension in the chain 35 is relaxed, with the result that the piston is again moved into its contracted position in the main brake cylinder 40, so as to return the elements of the brake rigging into their positions, as illustrated in FIG. 3, in order to actuate the brake mechanisms 41 and 42 into their brake release positions.

Referring now to FIGS. 6 and 7, a modified form of the railway car 110 is there illustrated that differs from the railway car 10 only with respect to the lateral vertical profile of the frame and the deck. Specifically, the car 110 is also adapted to transport two road semi-trailers mounted on the top thereof in tandem relation, or two freight containers mounted on the top thereof in tandem relation, or one road semi-trailer and one freight container mounted on the top thereof in tandem relation. More particularly, the car 110 comprises an elongated longitudinally extending box-like center sill 111 that is supported at the opposite ends thereof by a pair of wheeled trucks, not shown, a plurality of pairs of laterally extending side arms 124 carried by the opposite sides of the center sill 111 and arranged in longitudinally spaced-apart relation, and a flat deck 122 formed of sheet steel or the like and secured in place upon the top of the center sill 111 and the side arms 124. In this case, the opposite sides of the deck 122 carry a pair of elongated longitudinally extending and upwardly and laterally outwardly projecting side structures 122*a* constituting side guards. The dimensions of the fundamental elements of the car 110 corre-

spond to those of the car 10; whereby the longitudinal distance between the opposite ends of the deck 122 is at least about 85 feet and the lateral distance between the opposite sides of the deck 122 is at least about 100 inches. The side guards 122*a* project upwardly above the top at the deck 122 about 8 inches in order to prevent the possibility of a freight item mounted on the top of the deck 122 from being accidentally displaced laterally therefrom, since the deck 122 is of flat configuration from side to side thereof. The facilities for securing in place the road semi-trailers and the freight containers that may be mounted upon the top of the deck 122, have not been illustrated, since they form no part of the present invention and may be of conventional construction and arrangement.

Further, the car 110 comprises the hand brake mechanism 130 that includes the casing 131 secured to the mounting bracket 132 carried below the outer portion of the deck 122 by the adjacent side arm 124. The mechanism 130 is located about 3 feet from the adjacent end of the deck 122, and comprises the hand wheel 134 that is positioned directly below the adjacent side guard 122*a* and tilted downwardly and disposed laterally outwardly of the adjacent outer surface of the side guard 122*a*, all for the purpose previously described. Also, all of the elements of the car 110, including the hand wheel 134, are arranged laterally inwardly of the A.A.R. clearance line indicated for the car 110.

The mode of operation of the car 110 and of the hand brake mechanism 130, are substantially identical to those of the car 10 and the hand brake mechanism 30, and are not repeated in the interest of brevity.

Referring now to FIGS. 8 and 9, another modified form of the railway car 210 is there illustrated that differs from the railway car 110 only with respect to the lateral vertical profile of the frame and the deck. Specifically, the car 210 is also adapted to transport two road semi-trailers mounted on the top thereof in tandem relation, or two freight containers mounted on the top thereof in tandem relation, or one road semi-trailer and one freight container mounted on the top thereof in tandem relation. More particularly, the car 210 comprises an elongated longitudinally extending box-like center sill that is supported at the opposite ends thereof by a pair of wheeled trucks, not shown, a plurality of pairs of laterally extending side arms 224 carried by the opposite sides of the center sill 211 and arranged in longitudinally spaced-apart relation, and a composite deck 222 formed of sheet steel or the like and secured in place upon the top of the center sill 211 and the side arms 224.

In this case, the composite deck 222 comprises the elongated longitudinally extending central platform portion 222*x* and the pair of elongated longitudinally extending and laterally spaced-apart treadway portions 222*y* respectively disposed on opposite sides of the platform portion 222*x*, the platform portion 222*x* being disposed in an upper substantially horizontal plane and the treadway portions 222*y* being disposed in a lower substantially horizontal plane, the two planes being spaced-apart by a vertical distance of about 6". Also, in this case, the opposite sides of the deck 222 carry a pair of elongated longitudinally extending and upwardly and laterally outwardly projecting side structures 222*a* constituting side guards. The dimensions of the fundamental elements of the car 210 correspond to those of the car 10; whereby the longitudinal distance between the opposite ends of the deck 222 is at least about 85 feet, and the lateral distance between the opposite sides of the deck 222 is at least about 100 inches. The side guards 222*a* project upwardly above the top of the treadway portions 222*y* of the deck 222 about 8 inches in order further to prevent the possibility of a freight item mounted on the top of the deck 222 from being accidentally displaced laterally therefrom, the platform portion 222*x* of the deck 222 preventing lateral displacement therefrom of road semi-trailers, in an obvious manner. The facilities for securing in place the road semi-trailers and the freight containers that may be mounted upon the top of the deck 222 have not been illustrated, since they form no part of the present invention and may be of conventional construction and arrangement.

Further, the car 210 comprises the handbrake mechanism 230 that includes the casing 231 secured to the mounting bracket 232 carried below the outer portion of the treadway portion 222*y* of the deck 222 by the adjacent side arm 224. The mechanism 230 is located about 3 feet from the adjacent end of the deck 222 and comprises the handwheel 234 that is positioned directly below the adjacent side guard 222*a* and tilted downwardly and disposed laterally outwardly of the adjacent outer surface of the side guard 222*a* only for the purpose previously described. Also, all of the elements of the car 210, including the handwheel 223, are arranged laterally inwardly of the A.A.R. clearance line indicated for the car 210.

The mode of operation of the car 210 and of the hand brake mechanism 230, are substantially identical to those of the car 10 and the hand brake mechanism 30, and are not repeated in the interest of brevity.

In view of the foregoing, it is apparent that there has been provided in a multi-purpose railway car of the piggyback type, an improved arrangement and location of the hand brake mechanism, so that the same is readily accessible to a brakeman either from a position on top of the deck of the car or from a position on the ground, and so that the hand brake mechanism is in non-interfering relation with loading and unloading operations involved in all of the known types of freight-handling systems previously employed in conjunction with such cars.

While there has been described what is at present considered to be the preferred embodiment of the invention, it will be understood that various modifications may be made therein, and it is intended to cover in the appended claims all such modifications as fall within the true spirit and scope of the invention.

What is claimed is:

1. A railway car especially adapted to transport simultaneously two road semi-trailers and comprising an elongated longitudinally extending frame having a length between the opposite ends thereof in excess of about 85 feet, a pair of wheeled trucks respectively supporting the opposite end of said frame, a pair of brake mechanisms respectively incorporated in said trucks, brake rigging carried by said frame for simultaneously controlling said brake mechanisms, a pair of elongated longitudinally extending and laterally spaced-apart treadways respectively carried by the opposite sides of said frame and adapted respectively to support the laterally spaced-apart road wheels of each of two road semi-trailers mounted in tandem relation on top of said frame, the longitudinal distance between the opposite ends of each of said treadways being at least about 85 feet and the lateral distance between the opposite outer sides of said treadways being at least about 100 inches, hand brake mechanism carried by one side of said frame adjacent to one end thereof and disposed below the adjacent one of said treadways and positioned laterally inwardly of the adjacent outer side of said one treadway, said hand brake mechanism including a manually operable hand wheel projecting laterally outwardly therefrom and positioned closely adjacent to and laterally outwardly of the outer side of said one treadway, whereby said hand wheel may be readily operated by a brakeman either from a position on top of said one treadway or from a position on the ground, and an operative connection between said hand brake mechanism and said brake rigging, said hand wheel being arranged so that the top thereof does not project upwardly any substantial distance above the top of said one treadway, whereby said hand wheel is in a non-

interfering position with respect to loading and unloading operations of the road semi-trailers with respect to the top of said frame, all of the elements of said car and all of the parts carried by said frame and including said hand wheel being arranged laterally inwardly so that no one of them projects beyond the A.A.R. clearance line for said car.

2. The railway car set forth in claim 1, wherein said hand brake mechanism is of conventional non-spin type.

3. The railway car set forth in claim 1, wherein the vertical distance between the top of said treadways and the top of the rails supporting said trucks is not in excess of 37 inches so as to insure that said hand wheel is readily accessible to a brakeman from a position on the ground.

4. The railway car set forth in claim 1, wherein the longitudinal distance between said hand brake mechanism and the adjacent end of said frame is about 3 feet.

5. A railway car especially adapted to transport simultaneously two road semi-trailers and comprising an elongated longitudinally extending frame having a length between the opposite ends thereof in excess of about 85 feet, a pair of wheeled trucks respectively supporting the opposite ends of said frame, a pair of brake mechanisms respectively incorporated in said trucks, brake rigging carried by said frame for simultaneously controlling said brake mechanisms, a pair of elongated longitudinally extending and laterally spaced-apart treadways respectively carried by the opposite sides of said frame and adapted respectively to support the laterally spaced-apart road wheels of each of two road semi-trailers mounted in tandem relation on top of said frame, the longitudinal distance between the opposite ends of each of said treadways being at least about 85 feet and the lateral distance between the opposite outer sides of said treadways being at least about 100 inches, hand brake mechanism carried by one side of said frame adjacent to one end thereof and disposed below the adjacent one of said treadways and positioned laterally inwardly of the adjacent outer side of said one treadway, said hand brake mechanism including a rotatable operating shaft and a manually operable hand wheel carried on the outer end of said operating shaft, said hand brake mechanism being arranged so that said operating shaft projects laterally outwardly and downwardly in order to position said hand wheel closely adjacent to and laterally outwardly of the outer side of said one treadway and inclined with respect to the vertical in order that the top of said hand wheel is disposed laterally outwardly of the bottom thereof, whereby said hand wheel may be readily operated by a brakeman either from a position on top of said one treadway or from a position on the ground, and an operative connection between said hand brake mechanism and said brake rigging, said hand wheel being arranged so that the top thereof does not project upwardly any substantial distance above the top of said one treadway, whereby said hand wheel is in a non-interfering position with respect to loading and unloading operations of the road semi-trailers with respect to the top of said frame, all of the elements of said car and all of the parts carried by said frame and including said hand wheel being arranged laterally inwardly so that no one of them projects beyond the A.A.R. clearance line for said car.

6. A railway car especially adapted to transport simultaneously two road semi-trailers or two freight containers or one road semi-trailer and one freight container and comprising an elongated longitudinally extending narrow beam having a length between the opposite ends thereof in excess of about 85 feet, a pair of wheeled trucks respectively supporting the opposite ends of said beam, a pair of brake mechanisms respectively incorporated in said trucks, brake rigging carried by said beam for simultaneously controlling said brake mechanisms, said beam defining an elongated longitudinally extending centrally disposed substantially horizontal narrow platform on the top thereof upon which two freight containers are adapted to be mounted in tandem relation, the longitudinal distance between the opposite ends of said platform being at least 85 feet and the lateral distance between the opposite outer sides of said platform being about 40 inches, a pair of elongated longitudinally extending and laterally spaced-apart treadways respectively carried by the opposite sides of said beam and positioned in a substantially horizontal plane located below the top of said platform and adapted respectively to support the laterally spaced-apart road wheels of each of two road semi-trailers mounted in tandem relation on top of said beam, the longitudinal distance between the opposite ends of each of said treadways being at least about 85 feet and the lateral distance between the opposite outer sides of said treadways being at least about 100 inches, the vertical distance between the top of said platform and the plane of the top of said treadways disposed therebelow not being substantially greater than about 8 inches so as to prevent interference by said platform with the underframe of a road semi-trailer mounted on top of said beam, hand brake mechanism carried by one side of said beam adjacent to one end thereof and disposed below the adjacent one of said treadways and positioned laterally inwardly of the adjacent outer side of said one treadway, said hand brake mechanism including a manually operable hand wheel projecting laterally outwardly therefrom and positioned closely adjacent to and laterally outwardly of the outer side of said one treadway, whereby said hand wheel may be readily operated by a brakeman either from a position on top of said one treadway or from a position on the ground, and an operative connection between said hand brake mechanism and said brake rigging, said hand wheel being arranged so that the top thereof does not project upwardly any substantial distance above the top of said one treadway, whereby said hand wheel is in a non-interfering position with respect to loading and unloading operations of the road semi-trailers and the freight containers with respect to the top of said beam, all of the elements of said car and all of the parts carried by said beam and including said hand wheel being arranged laterally inwardly so that no one of them projects beyond the A.A.R. clearance line for said car.

7. A railway car especially adapted to transport simultaneously two road semi-trailers and comprising an elongated longitudinally extending frame having a length between the opposite ends thereof in excess of about 85 feet, a pair of wheeled trucks respectively supporting the opposite ends of said frame, a pair of brake mechanisms respectively incorporated in said trucks, brake rigging carried by said frame for simultaneously controlling said brake mechanisms, a pair of elongated longitudinally extending and laterally spaced-apart treadways respectively carried by the opposite sides of said frame and adapted respectively to support the laterally spaced-apart road wheels of each of two road semi-trailers mounted in tandem relation on top of said frame, the longitudinal distance between the opposite ends of each of said treadways being at least about 85 feet and the lateral distance between the opposite outer sides of said treadways being at least about 100 inches, a pair of elongated longitudinally extending and laterally spaced-apart side structures respectively carried by the outer sides of said treadways and respectively projecting upwardly therefrom to form side guards therefor, the longitudinal distance between the opposite ends of each one of said side guards being substantially commensurate with the length of the adjacent one of said treadways and the vertical projection of each one of said side guards above the top of the adjacent one of said treadways being in the general range 4 inches to 8 inches and the lateral distance between the tops of said side guards being somewhat in excess of 100 inches but not in excess of 120 inches, hand brake mechanism carried by one side of said frame adjacent to one end thereof and disposed below the adjacent one of said side guards and laterally inwardly of the adjacent outer side

of said one side guard, said hand brake mechanism including a manually operable hand wheel projecting laterally outwardly therefrom and positioned closely adjacent to and laterally outwardly of the outer side of said one side guard, whereby said hand wheel may be readily operated by a brakeman either from a position on top of said one treadway or from a position on the ground, and an operative connection between said hand brake mechanism and said brake rigging, said hand wheel being arranged so that the top thereof does not project upwardly any substantial distance above the top of said one treadway and is disposed well below the top of said one side guard, whereby said hand wheel is in a non-interfering position with respect to loading and unloading operations of the road semi-trailers with respect to the top of said frame, all of the elements of said car and all of the parts carried by said frame and including said hand wheel being arranged laterally inwardly so that no one of them projects beyond the A.A.R. clearance line for said car.

8. A railway car especially adapted to transport simultaneously two road semi-trailers and comprising an elongated longitudinally extending frame having a length between the opposite ends thereof in excess of about 85 feet, a pair of wheeled trucks respectively supporting the opposite ends of said frame, a pair of brake mechanisms respectively incorporated in said trucks, brake rigging carried by said frame for simultaneously controlling said brake mechanisms, an elongated longitudinally extending deck carried by said frame and having a substantially flat top and defining a pair of elongated longitudinally extending and laterally spaced-apart treadways respectively disposed adjacent to the opposite sides of deck and adapted respectively to support the laterally spaced-apart road wheels of each of two road semi-trailers mounted in tandem relation on top of said frame, the longitudinal distance between the opposite ends of said deck being at least about 85 feet and the lateral distance between the opposite outer sides of said deck being at least about 100 inches, hand brake mechanism carried by one side of said frame adjacent to one end thereof and disposed below the adjacent one side of said deck and positioned laterally inwardly of the outer side of said one side of said deck, said hand brake mechanism including a manually operable hand wheel projecting laterally outwardly therefrom and positioned closely adjacent to and laterally outwardly of the outer side of said one side of said deck, whereby said hand wheel may be readily operated by a brakeman either from a position on top of said one side of said deck or from a position on the ground, and an operative connection between said hand brake mechanism and said brake rigging, said hand wheel being arranged so that the top thereof does not project upwardly any substantial distance above the top of said one side of said deck, whereby said hand wheel is in a non-interfering position with respect to loading and unloading operations of the road semi-trailers with respect to the top of said frame, all of the elements of said car and all of the parts carried by said frame and including said hand wheel being arranged laterally inwardly so that no one of them projects beyond the A.A.R clearance line for said car.

9. A railway car especially adapted to transport simultaneously two road semi-trailers and comprising an elongated longitudinally extending frame having a length between the opposite ends thereof in excess of about 85 feet, a pair of wheeled trucks respectively supporting the opposite ends of said frame, a pair of brake mechanisms respectively incorporated in said trucks, brake rigging carried by said frame for simultaneously controlling said brake mechanisms, an elongated longitudinally extending deck carried by said frame and having a substantially flat top and defining a pair of elongated longitudinally extending and laterally spaced-apart treadways respectively disposed adjacent to the opposite sides of deck and adapted respectively to support the laterally spaced-apart road wheels of each of two road semi-trailers mounted in tandem relation on top of said frame, the longitudinal distance between the opposite ends of said deck being at least about 85 feet and the lateral distance between the opposite outer sides of said deck being at least about 100 inches, a pair of elongated longitudinally extending and laterally spaced-apart side structures respectively carried by the outer sides of said deck and respectively projecting upwardly therefrom to form side guards therefor, the longitudinal distance between the opposite ends of each one of said side guards being substantially commensurate with the length of said deck and the vertical projection of each one of said side guards above the top of said deck being in the general range 4 inches to 8 inches and the lateral distance between the tops of said side guards being somewhat in excess of 100 inches but not in excess of 120 inches, hand brake mechanism carried by one side of said frame adjacent to one end thereof and disposed below the adjacent one of said side guards and laterally inwardly of the adjacent outer side of said one side guard, said hand brake mechanism including a manually operable hand wheel projecting laterally outwardly therefrom and positioned closely adjacent to and laterally outwardly of the outer side of said one side guard, whereby said hand wheel may be readily operated by a brakeman either from a position on top of said one side of said deck or from a position on the ground, and an operative connection between said hand brake mechanism and said brake rigging, said hand wheel being arranged so that the top thereof does not project upwardly any substantial distance above the top of said deck and is disposed well below the top of said one side guard, whereby said hand wheel is in a non-interfering position with respect to loading and unloading operations of the road semi-trailers with respect to the top of said frame, all of the elements of said car and all of the parts carried by said frame and including said hand wheel being arranged laterally inwardly so that no one of them projects beyond the A.A.R. clearance line for said car.

10. A railway car especially adapted to transport simultaneously two road semi-trailers or two freight containers or one road semi-trailer and one freight container and comprising an elongated longitudinally extended frame having a length between the opposite ends thereof in excess of about 85 feet, a pair of wheeled trucks respectively supporting the opposite ends of said frame, a pair of brake mechanisms respectively incorporated in said trucks, brake rigging carried by said frame for simultaneously controlling said brake mechanisms, an enlongated longitudinally extending deck carried by said frame and defining an enlongated longitudinally extending centrally disposed substantially horizontal narrow platform on the top of said frame upon which two freight containers are adapted to be mounted in tandem relation and defining a pair of elongated longitudinally extending and laterally spaced-apart treadways on the top of said frame and positioned in a substantially horizontal plane located below the top of said platform and adapted respectively to support the laterally spaced-apart road wheels of each of two road semi-trailers mounted in tandem relation on top of said deck, the longitudinal distance between the opposite ends of said platform being at least 85 feet and the lateral distance between the opposite outer sides of said platform being about 40 inches, the longitudinal distance betwen the opposite ends of each of said treadways being at least about 85 feet and the lateral distance between the oppostie outer sides of said treadways being at least about 100 inches, the vertical distance between the top of said platform and the plane of the top of said treadways disposed therebelow not being substantially greater than about 8 inches so as to prevent interference by said platform with the underframe of a road semi-trailer mounted on top of said frame, hand brake mechanism carried by one side of said frame adjacent to one end thereof and disposed below the adjacent one side of said deck and positioned laterally inwardly of the outer side of said one

side of said deck, said hand brake mechanism including a manually operable hand wheel projecting laterally outwardly therefrom and positioned closely adjacent to and laterally outwardly of the outer side of said one side of said deck, whereby said hand wheel may be readily operated by a brakeman either from a position on top of ground, and an operative connection between said hand brake mechanism and said brake rigging, said hand wheel being arranged so that the top thereof does not project upwardly any substantial distance above the top of said one side of said deck, whereby said hand wheel is in a non-interfering position with respect to loading and unloading operations of the road semi-trailers with respect to the top of said frame, all of the elements of said car and all of the parts carried by said frame and including said hand wheel being arranged laterally inwardly so that no one of them projects beyond the A.A.R. clearance line for said car.

11. A railway car especially adapted to transport simultaneously two road semi-trailers or two freight containers or one road semi-trailer and one freight container and comprising an elongated longitudinally extending frame having a length between the opposite ends thereof in excess of about 85 feet, a pair of wheeled trucks respectively supporting the opposite ends of said frame, a pair of brake mechanisms respectively incorporated in said trucks, brake rigging carried by said frame for simultaneously controlling said brake mechanisms, an elongated longitudinally extending deck carried by said frame and defining an elongated longitudinally extending centrally disposed substantially horizontal narrow platform on the top of said frame upon which two freight containers are adapted to be mounted in tandem relation and defining a pair of elongated longitudinally extending and laterally spaced-apart treadways on the top of said frame and positioned in a substantially horizontal plane located below the top of said platform and adapted respectively to support the laterally spaced-apart road wheels of each of two road semi-trailers mounted in tandem relation on top of said deck, the longitudinal distance betwen the opposite ends of said platform being at least 85 feet and the lateral distance between the opposite outer sides of said platform being about 40 inches, the longitudinal distance between the opposite ends of each of said treadways

being at least about 85 feet and the lateral distance between the opposite outer sides of said treadways being at least about 100 inches, the vertical distance between the top of said platform and the plane of the top of said treadways disposed therebelow not being substantially greater than about 8 inches so as to prevent interference by said platform with the underframe of a road semi-trailer mounted on top of said beam, a pair of elongated longitudinally extending and laterally spaced-apart side structures respectively carried by the outer sides of said deck and respectively projecting upwardly therefrom to form side guards therefor, the longitudinal distance between the opposite ends of each one of said side guards being substantially commensurate with the length of said deck and the vertical projection of each one of said side guards above the top of said deck being in the general range 4 inches to 8 inches and the lateral distance between the tops of said side guards being somewhat in excess of 100 inches but not in excess of 120 inches, hand brake mechanism carried by one side of said frame adjacent to one end thereof and disposed below the adjacent one of said side guards and laterally inwardly of the adjacent outer side of said one side guard, said hand brake mechanism including a manually operable hand wheel projecting laterally outwardly therefrom and positioned closely adjacent to and laterally outwardly of the outer side of said one side guard, whereby said hand wheel may be readily operated by a brakeman either from a position on top of said one side of said deck or from a position on the ground, and an operative connection between said hand brake mechanism and said brake rigging, said hand wheel being arranged so that the top thereof does not project upwardly any substantial distance above the top of said deck and is disposed well below the top of said one side guard, whereby said hand wheel is in a non-interfering position with respect to loading and unloading operations of the road semi-trailers with respect to the top of said frame, all of the elements of said car and all of the parts carried by said frame and including said hand wheel being arranged laterally inwardly so that no one of them projects beyond the A.A.R. clearance line for said car.

No references cited.

UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,163,128 December 29, 1964

Samuel H. Enochian

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 13, line 6, after "of" insert -- said one side of said deck or from a position on the --.

Signed and sealed this 20th day of July 1965.

(SEAL)
Attest:

ERNEST W. SWIDER
Attesting Officer

EDWARD J. BRENNER
Commissioner of Patents