(12) UK Patent Application (19) GB (11) 2 147 551 A

(43) Application published 15 May 1985

(21) Application No 8326276

(22) Date of filing 30 Sep 1983

(51) INT CL⁴
B60F 1/04

(52) Domestic classification
B7D 6K1A
B7H 601 603 718 720 724 751 B

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(56) Documents cited
US 2841094 US 2709969 US 2036535
US 2800086

(58) Field of search
B7D
B7H

(54) Road/rail intermodal transport

(57) The freight or passenger vehicles of the invention are essentially rail vehicles (e.g. strong enough to withstand compressive buffing loads and tensile haulage loads) to/from which the running gear of the appropriate mode or rail gauge may be attached/detached.

For example (Fig. 4) after a rail loco. has left a train of containers, a road tractor backs a "servant bogie" (17) under one end of the first container, so lifting the rail wheels; the tractor pulls the container away from the train and runs around to pick up the other end of the container.

For rail transport of containers without their own running gear, the rail-going "servant bogie" of Fig. 9 may be used; this has railway couplings 12 and a pair of fifth-wheel couplings 20.

A road train may be formed by mounting adjacent containers on a common road-wheeled bogie which preferably has steerable wheels.

Fig 4

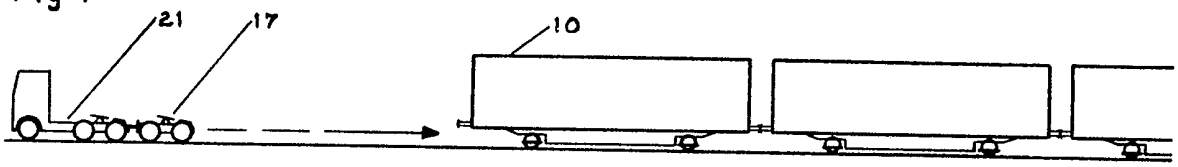
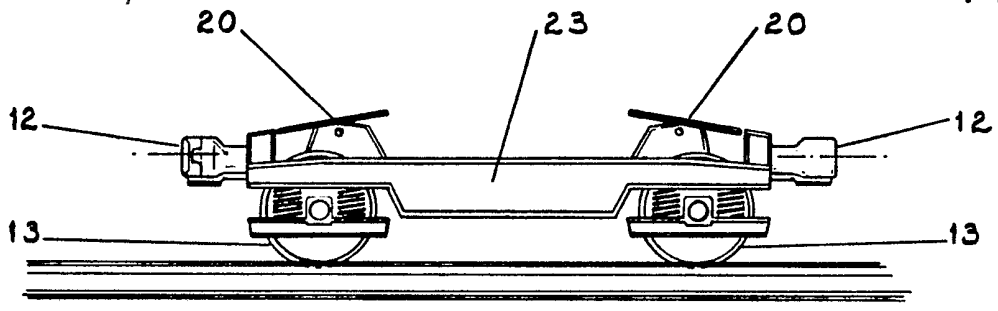


Fig 9



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The drawing(s) originally filed was/were informal and the print here reproduced is taken from a later filed formal copy.

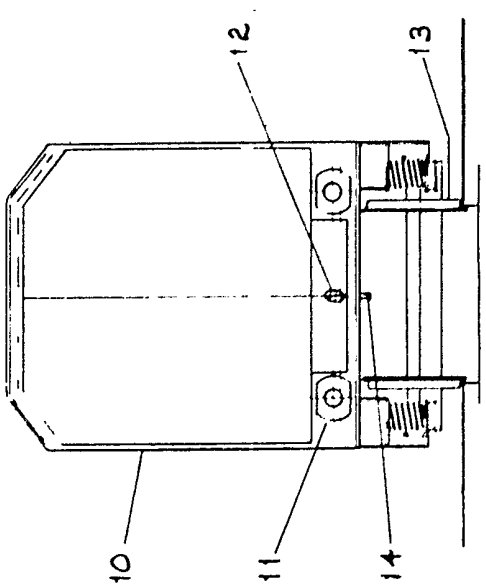


Fig 1

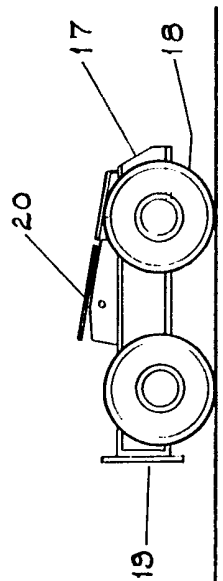


Fig 3

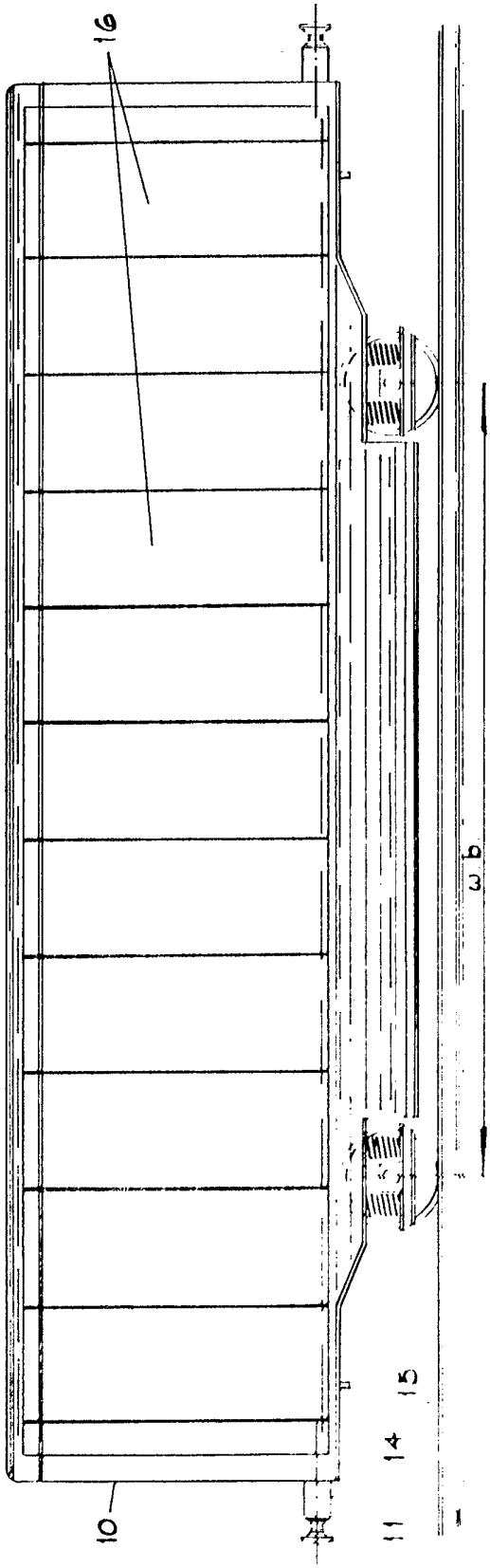


Fig 2

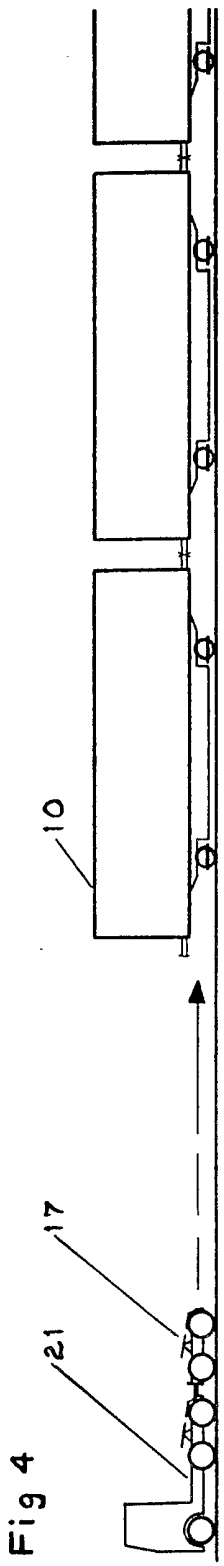


Fig 4

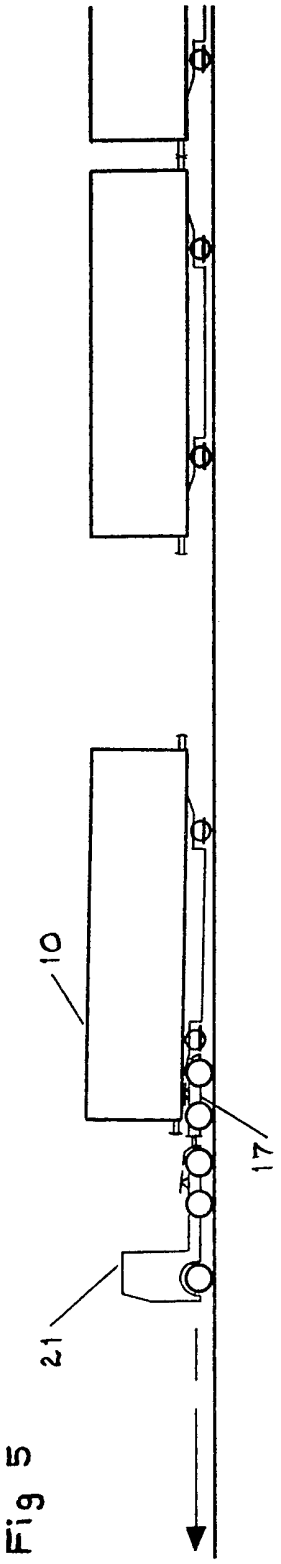


Fig 5

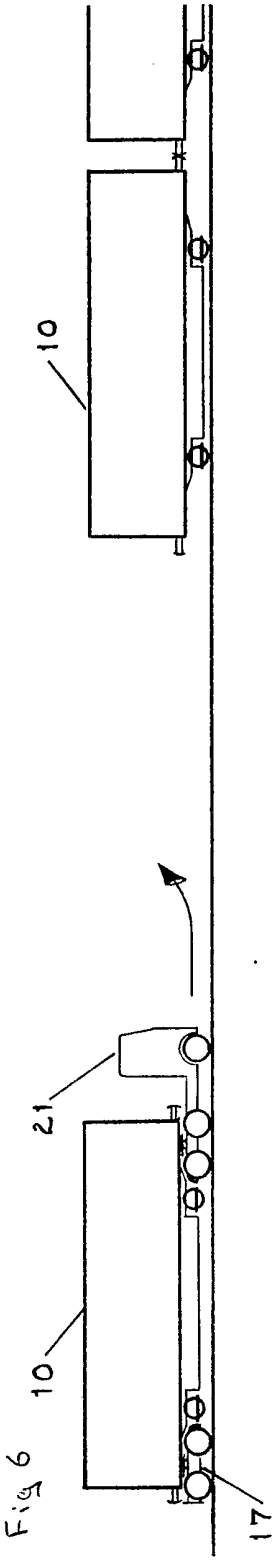


Fig 6

Fig 7

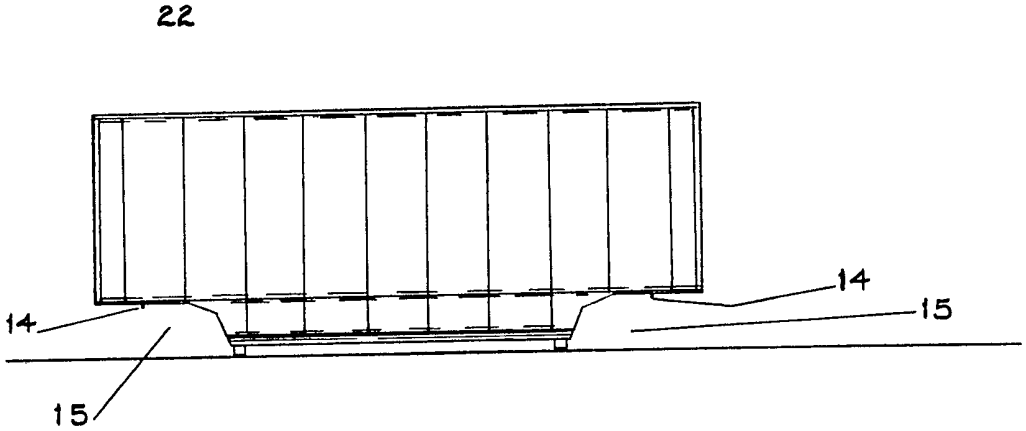


Fig 8

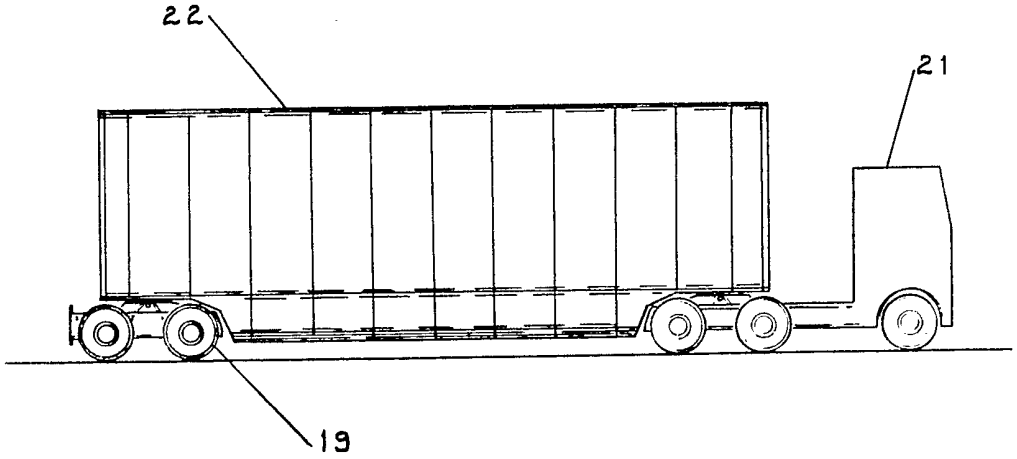


Fig 9

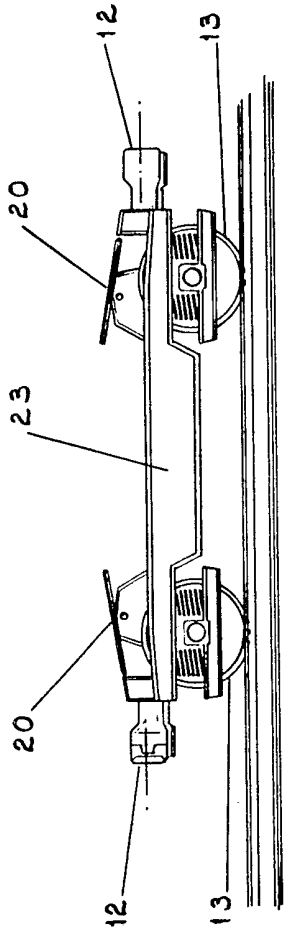


Fig 10

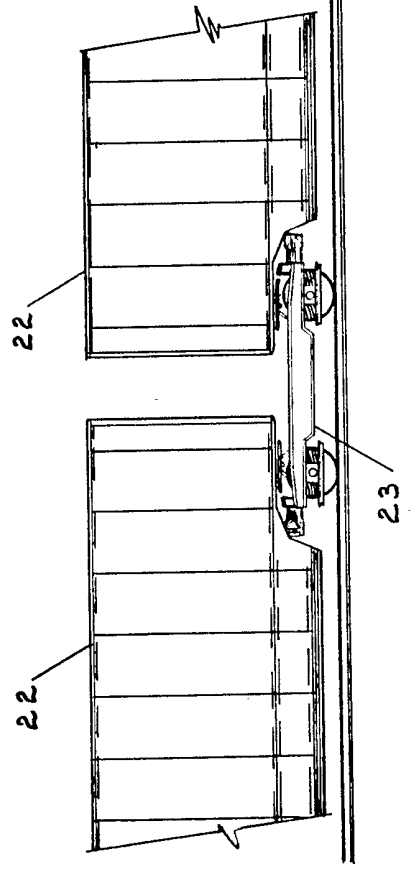
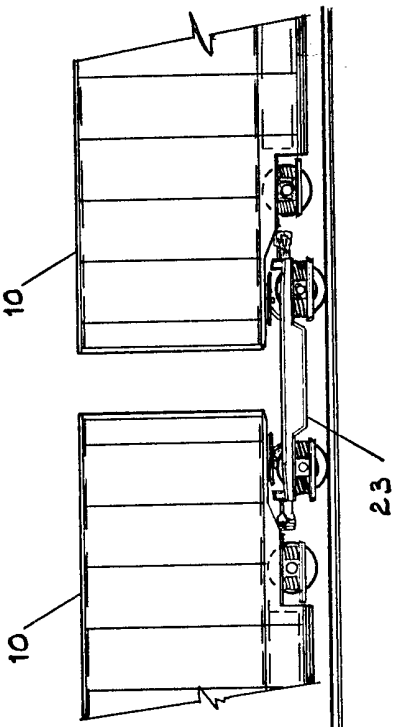


Fig 11



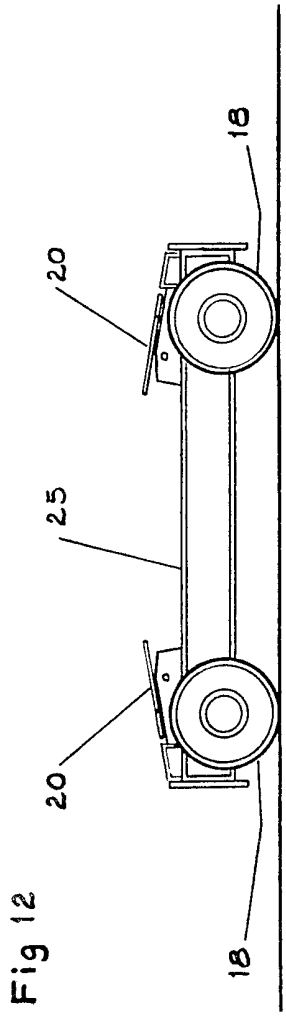


Fig 12

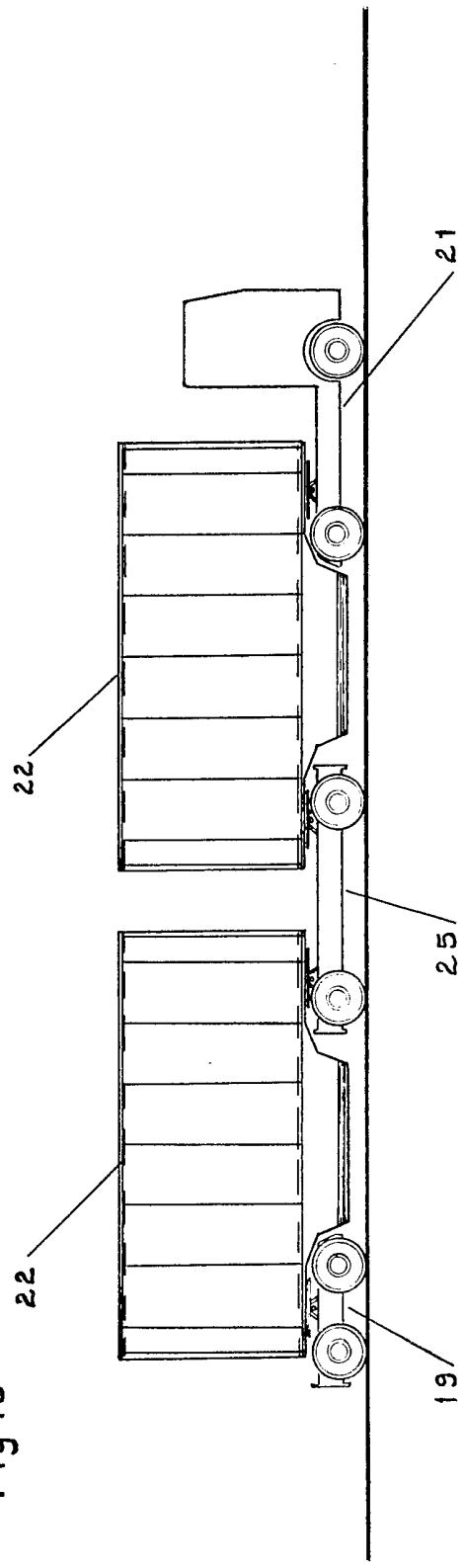


Fig 13

Fig 14

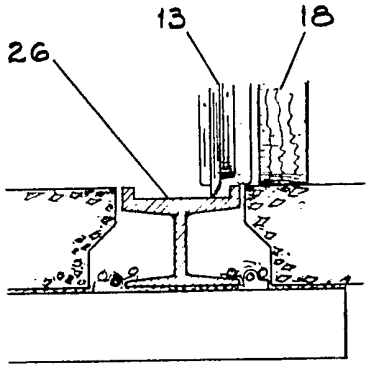
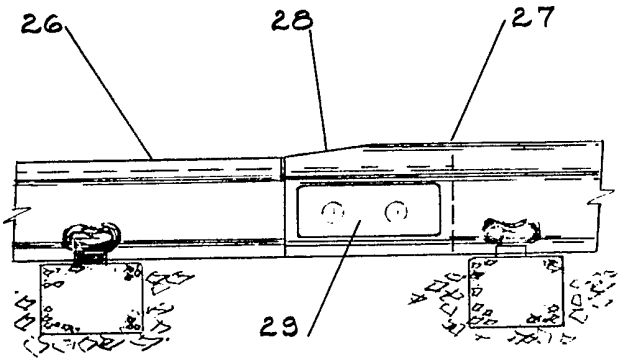


Fig 15



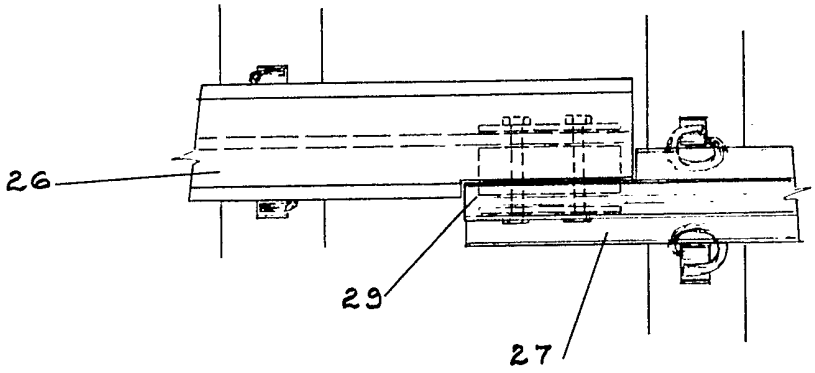


Fig 16

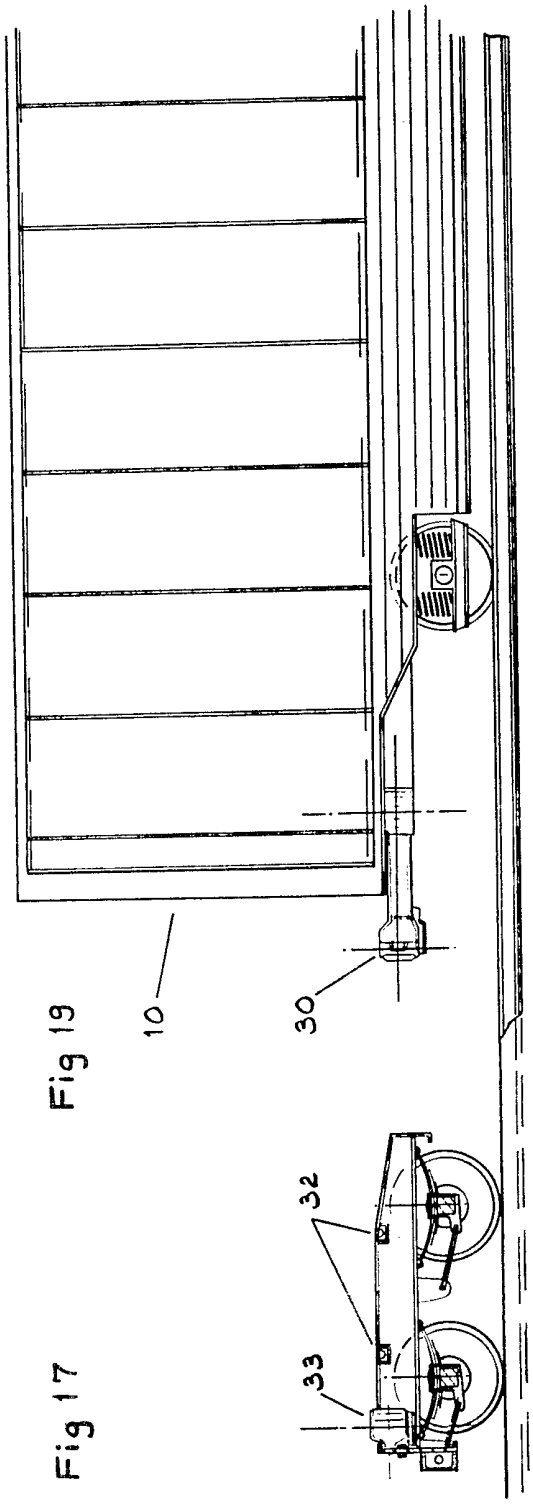


Fig 19

Fig 17

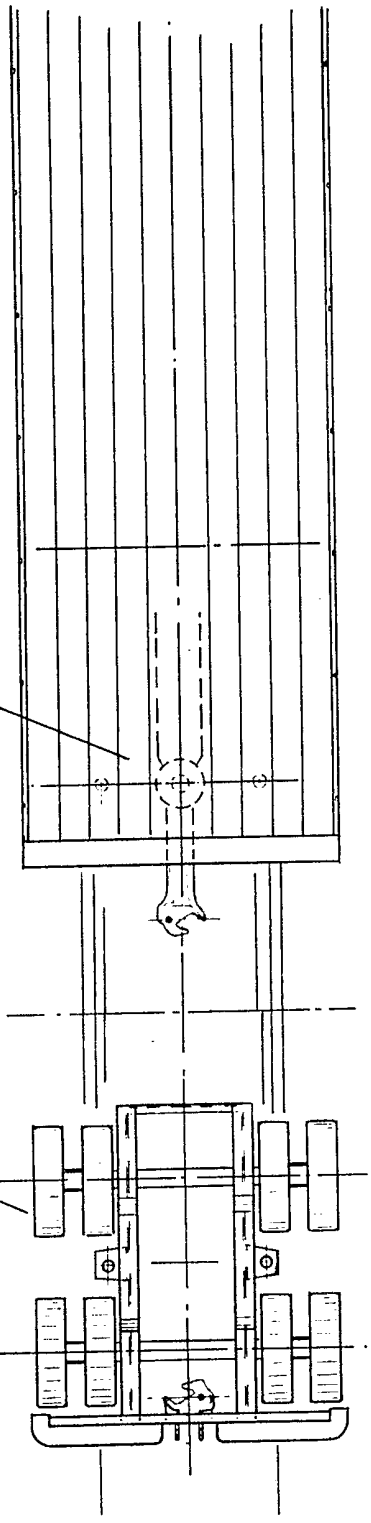
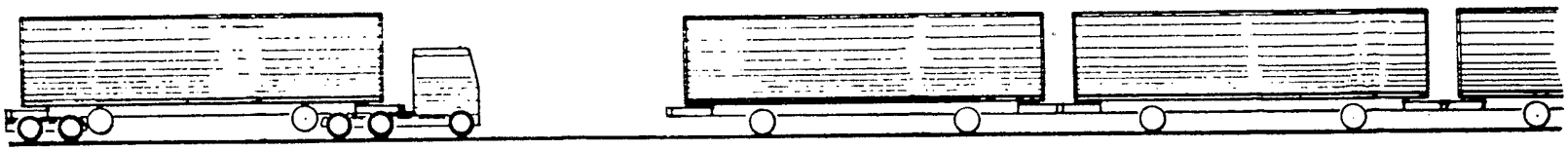


Fig 20

Fig 18

Fig 21



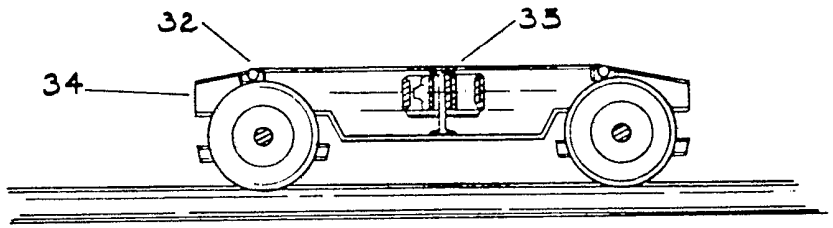


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Fig 22

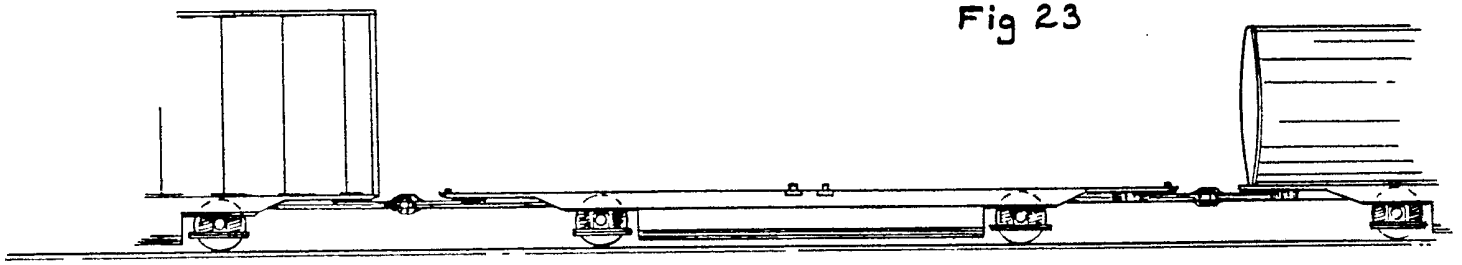

Fig 23

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SPECIFICATION

Intermodal transport vehicles and containers

I, DORIAN ROSS WILLIAMS BAKER, a British subject, of Oriel Villa, 64, Bloomfield Avenue, Bath, Avon, BA2 3AA, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:–

This invention relates to Inter-model Transport of freight, or passengers, or movement of items not primarily intended as transport units but adapted according to this invention, and more especially to such vehicles or units intended for conveyance by overland routes whereon it may be expedient to undertake the trunk haul by one transport mode, such as railway, while local collection and delivery are undertaken by another transport mode, such as road.

It may be desirable to convey a cargo from origin to destination without the need to tranship the cargo from one vehicle or container to another during a journey that employs two or more transport modes. However, upon such a journey it may also be desirable to minimise the value (time related cost) and weight (movement related cost) of the running equipment, being a fixed part of such vehicle appropriate for one transport mode, which needs must be conveyed when the vehicle is moving by the second transport mode. It may also be desirable to minimise the value and weight of the auxiliary equipment utilized during a discreet movement by a transport mode for which the vehicle or container is not fully equipped, particularly when such provision would duplicate a measure of the inherant capability of the vehicle or container.

Furthermore, it may be desirable to simplify the means by which the transfer from one mode to another is accomplished so as to obviate the need for capital intensive equipment such as straddle cranes and thus enable such transfer to be accomplished at remote or random locations without commitment to intensive use of sites.

The first Principle of Transport, which is particularly applicable to freight, is that transhipment between modes at points between origin and destination should be minimised or eased. If it is not appropriate to eliminate transfer of a conveying vehicle or container, such as when the fuel and manpower-saving potential of rail trunk haul are to be turned to account for non-rail-connected origins or destinations, then the Inter-modal transfer of the conveyance should be minimised or eased.

That the principle of limited-transfer is appropriate and commercially viable alongside the no-transfer, no-transhipment road freight services that are available, there can be no about, as witness the development of inland container transport (C.O.F.C.) and of "Piggy-back" transport (T.O.F.C.) of road semi-trailers or complete lorries on rail wagons in Europe, North America and Australia. The disadvantage of these systems is that although transfer is simplified, the hardware required to accomplish it is large, costly and, therefore, few and far between, the rail vehicles add considerable tare weight to the trunk haul and elements of the equipment are carried about as additional tare rather than performing assetts. That these systems leave a gap in the market is amply demonstrated by the number of attempts there have been to develop smaller or cheaper container transfer equipment, lighter "Piggy-back" rail wagons and by the success of such systems as British Rail's Speedlink general merchandise trains which can involve considerable transhipment of goods between rail and road vehicles at each end of the rail journey. So there does still seem to be an unsatisfied market for a freight vehicle that can make local collections and deliveries by road and the trunk haul by rail.

The Road-Railer freight vehicles of the Bi-Modal Corporation of America form one essay in the development of a vehicle that would enable the railway to provide a service to the smaller forwarder offering a no-transhipment, door-to-door facility as offered by the conventional articulated lorry. However, the vehicles are not compatible with other rail traffic and their use must be limited to dedicated services over specially authorised routes able to take their high 27 tonne axle loads. As such, I feel that the design philosophy is inappropriate. In essence, the vehicle is a road type, articulated lorry trailer that was adapted by means of a special coupling and a retractable rail axle to run on the rails. A train has to be formed behind a special truck which carries the front end of the first trailer and couples to the locomotive. Once formed, a train cannot be broken or reshunted in any normal railway manner until it is completely disassembled because it becomes articulated throughout its length.

Contrary to the genesis of the afore-mentioned vehicles, the design philosophy behind the present invention is that the vehicle should be developed from the more exacting role: a unit within a train moving at high speed subject to compressive buffing loads and to tensile haul loads with adaptations for the less exacting role: that of a unit being handled singly over short distances with time spent stationary while loading and unloading. A vehicle in accordance with the invention is essentially a Rail vehicle whereon any special equipment that must go up, down, on or off at change of mode will be highway-going equipment. A Container or adapted non-transport dedicated unit in accordance with the invention has a structure and form as for an

articulated rail vehicle sans running gear whereunto running gear of appropriate mode or rail gauge may be attached or detached at transfer points, or completely removed for a sea passage. The expected advantages to be gained from such an approach are that a conveyance is provided wherein goods may be stowed and secured intact for a journey which employs several modes of transport and in addition:

1 That tare weight, particularly on the trunk haul is minimised. In fact a train of vehicles constructed or containers constructed and conveyed in accordance with the present invention would be lighter in tare weight per unit of capacity than any other railway—traffic—compatible Intermodal transport system.

2 That each vehicle constructed in accordance with the present invention equipped, for example, to run on a railway of a particular guage, may be handled in the same way as other railway vehicles operated on that particular railway: shunted and assembled into trains for various destinations amongst other railway traffic.

3 That vehicles or containers constructed in accordance with the present invention may be transferred simply between road and rail conveyance upon the provision of minimal fixed capital investment and without the need for transfer—dedicated equipment at such sites.

4 That vehicles (or containers) constructed in accordance with the present invention may be transferred to running gear adapted to a railway guage for which the vehicle is not appropriately equipped, in a simple manner and without severe duplication of provision.

5 That vehicles or containers constructed in accordance with the present invention may be delivered and auxiliary transport equipment appropriate to the final mode of transport recovered immediately without the provision of fixed capital equipment or the presence of transfer—dedicated equipment at such sites of destination or origin.

Such advantages would be of benefit in any situation where traffic must negotiate a change of mode, as where:

1 Intermodal transport is required to have a lighter tare weight on rail than is generally the case at present.

2 Traffic must transfer or be transhipped between rail and road transport.

3. The benefits of existing Intermodal techniques cannot be exploited for financial reasons.

4 Rail traffic must negotiate a break of guage.

5 A service is to be developed on a route whose permanent way characteristics are to be altered (as from highway to railway or from one railway guage to another.)

According to the present invention there is provided a vehicle, container or item not intended as a transport unit, having a structure enabling the conveyance to be transferred as a unit in a train (rail or road train) subjected directly to train breaking buffing and haul loads, and a form enabling the conveyance to be mounted onto (and dismounted from) a bogie or truck, having wheels and other equipment adapted for movement by a second or further transport mode for which the conveyance has incomplete appropriate integral equipment, by means of the said bogie being pushed up to so as to lift and then move under an appropriate part of the said conveyance and make a suitably fixed connection between the bogie and conveyance all as is commonly employed in the connection (and disconnection) of articulated lorry tractor and semi-trailer sets using, for example, "Kingpin" and "fifth wheel" couplings. The conveyance is "double-ended", having the same form at each end, so as to enable a bogie, as described, or an articulated lorry tractor unit, as referred to, to be driven under and connected to either end.

In association with such conveyance there are also provided one or two non-driving bogies (ie, having no driver control position but in certain embodiments; having propelling axles or steering axles) of two or more axles together with either one or two carrying and coupling devices to form either a trailing end or an intermediate articulation bogie, and also such equipment or fitting, including wheels brakes, couplings, registration marks, warning or indication devices and the like as are appropriate to the particular transport mode for which the bogie is intended and for which the conveyance itself is not fully equipped.

Another aspect of the present invention provided an intermodal transport system comprising:

a container;

a set of rail wheels mounted or mountable on the container;

a set of road wheels releasably connectable to one end of the container; and

a tractor connectable to the other end of the container in a manner permitting relative rotation between the tractor and the container about an upwardly extending axis,

whereby the container can be selectively conveyed (a) by rail, when supported on the set of rail wheels, with the road wheels removed, and drawn by a locomotive; and (b) by road, when supported by the set of road wheels and drawn by the tractor.

The set of rail wheels may comprise a bogie, which may be permanently or releasably connected to the container. In use of a system in accordance with the present invention, a locomotive-hauled rail train may be formed by mounting adjacent containers on common rail-wheeled bogies.

The set of road wheels may comprise a bogie, and it is possible to form a road train

by connecting two or more containers end to end, adjacent containers being mounted on a common road wheel bogie. For this purpose, it is preferable for the road wheel bogies to comprise steerable wheels, which may be controllable in response to relative pivotal movement between the road wheel bogie and the or each container mounted on it.

A specific form of the invention able to move by road and rail will now be described by way of example with reference to the accompanying drawings in which:

Figure 1 is an end elevation of this form; a "Rail-Trailer".

Figure 2 is a side elevation of a "Rail-Trailer".

Figure 3 is a side elevation of a road-going rubber-tired "servant bogie" of end trailing type.

The following three figures show how the "Rail-Trailer" may be collected from a railhead for onward movement by road, where

Figure 4 shows a "servant bogie" being pushed under a "Rail-Trailer" by the road-going tractor.

Figure 5 shows the tractor hauling the "Rail-Trailer" clear of the train.

Figure 6 shows the "Rail-Trailer" mounted on "servant bogie" and tractor prepared for the road.

In the form shown the "Rail-Trailer" 10 comprises a rail van of such dimensions and weight as are appropriate to the railway administration and highway regulations within which it is to be operated, having buffers 11, couplings 12, running gear, including wheels, suspension and brakes, 13, set at such a wheel base, (w.b.) as to permit a suitably capacious void zone 15 so as to allow a "servant bogie" (trailing end type) 17, on rubber tyres 18, having road traffic warning lamps, indicator and registration plate assemblage 19; as well as "fifth-wheel" coupling plate 20, of a type that will mate with bearing plate and Kingpin 14; which are situated on the underside of the "Rail-trailer" 10 over the void zone 15 which is arranged so as to present a bearing plate and Kingpin 14 at a height, measured from rail level, corresponding to local articulated lorry construction and practice. All as indicated in Figs. 1, 2, & 3.

The servant bogie 17 is equipped with a fifth-wheel coupling 20 which is similar in all respects with such units as are fitted to articulated lorry tractor units except that, in this form, a trailing end bogie, the coupling plate is allowed no horizontal freedom. Its jaw centre-line is fixed in line with that of the chassis of the unit, and in addition it is provided with one or more upward acting bolts or spigots (not shown) which engage with rebates or sockets (not shown) in the bearing plate on the underside of the "rail-trailer" so as to obviate horizontal rotation between the faces of the fifth-wheel and the bearing plate and thus hold the "rail-trailer" in line with the centre line of the "servant" bogie.

Transfer from rail to road may be effected in the following manner; referring to Fig. 4, after the railway locomotive has left the train with its air brakes on, a road-going tractor backs its partner "servant bogie" up to the first "rail-trailer" so lifting one end up off the rails; referring to Fig. 5, the "rail-trailer" is uncoupled from the train, its air brakes connected to the "servant" bogie and thence to the road tractor which may now draw them away from the train; referring to Fig. 6, the tractor may now run around the "rail-trailer" and pick up the other end of the vehicle, air brakes and electrical circuits are connected via the "rail-trailer" to the "servant bogie" and the assemblage is prepared for the road journey. Return to the railway is the reverse of the above sequence at the interchange siding. Such a siding might consist of a railway siding with roadway paving to rail head level to the outside of each rail. For ease of re-railway it would be helpful if the siding were slightly broad of gauge.

At an intensively used interchange the siding might be comprised of a pair of grooved tram rails 26 (as shown in Fig. 14) having wide shallow flangeways, say 130 mm (30 mm basic flangeway plus 100 mm tolerance for re-railing) × 25 mm deep, set at 100 mm broader than the railway guage. The tractor driver would be able to drop the leading end pair of rail wheels into the flangeway, then run around the "Rail-Trailer" back up to the rear end "servant bogie" and push the assemblage running on the flanges of the leading railway wheels up to the railway end of the interchange siding. Here the tram rails would taper to true guage before mating with normal track 27 with provision for taking the wheels from running on their flanges and onto their steel tyres such as by tapering the rail head 28 as shown in Fig. 15. Fig. 16 is a plan view of the connection between the tram rail 26 described and normal Flat-Bottomed rail 27 showing flanges of both rails are trimmed to allow them to be Huck-bolted using suitable cast-iron spacers and fish plates, 29.

Further specific forms of the invention will now be described with reference to the accompanying drawings in which:

Fig. 7 is a side elevation of a container, a "Con-Trailer", or non-transport, dedicated unit in accordance with the invention.

Fig. 8 shows a "Con-Trailer" or units as described being conveyed by road-going "servant bogie" and tractor unit.

Fig. 9 is a side elevation of a Railway-going "Servant bogie".

Fig. 10 shows a number of "Con-Trailers" or units as described being conveyed by Railway-going "Servant bogie" and locomotive.

The "Con-Trailer", or unit as described, 22 has a structure able to meet the requirements of the most exacting mode by which it is to be conveyed whether solely by road, by rail where it is subject to train tensile loads, acceleration levels and brake forces, or by sea; for which lifting and stacking parameters may be specified. The form is such as to permit the unit 22 to stand on level ground as illustrated in Fig. 7 leaving suitably capacious void zones 15 beneath bearing plates and kingpins 14 as to allow a "Servant bogie" 19 to be introduced at one end and a tractor 21 at the other as shown in Fig. 8 and in a manner similar to that described in the initial example; the "Rail-Trailer".

Where the conveyance has a suitable structure and form for a specific rail journey but does not have its own running gear, it may be conveyed mounted on Railway-going "Servant bogies" 23, as shown in Fig. 9, having wheels, axles suspension & brakes 13, railway couplings 12 and fifth-wheel couplings 20. Unlike the trailing end, road-going "Servant bogie" before described, the two fifth-wheel coupling plates are allowed horizontal freedom to rotate about a vertical axis coinciding with that of the conveyance kingpin 14 when this is attached. Upward acting bolts or spigots (not shown) being integral parts of the fifth-wheel attachments and able to rotate with the coupling plate, engage with rebates or sockets (not shown) in the underside of the bearing plate 14 so as to provide additional shear strength in the axis of a train formation; perpendicular to the axis of such bolts and the kingpin, so as to sustain the forces as before described. Fig. 10 illustrates the use of such bogies to convey a number of "Con-Trailers" or units as described, by rail as, or as part of, a railway train. By equipping each bogie with railway couplings at each end the need for "barrier wagons" or "adapter units" is obviated. On some railways it may be necessary for this coupling to fold clear of the fifth-wheel couplings if heights interfere.

Fig. 11 shows a "Rail-Trailer" constructed to conform with one railway track gauge being carried by Railway "Servant bogies" of another gauge.

This illustration, Fig. 11, shows how a narrow gauge "Rail-Trailer" 10 may be conveyed on standard or broad guage track using Railway-going "Servant bogie" 23 in exactly the same manner as described for the "Con-Trailer".

The transfer to or from the Railway-going "Servant-bogies" 23 is effected in a similar manner to that described for road-going "Servant bogies" except that a shunting locomotives would be employed working in and out of a second siding intended for the storage or sourcing of the railway bogies.

Fig. 12 shows a Road-going (rubber tyred) "Servant-bogie" for intermediate articulations.

Fig. 13 shows a number of "Con-Trailers" in Road train form.

In certain situations it may be appropriate to convey a number of "Con-Trailers" 22 or units non-transport dedicated units in the form of a Road train as illustrated in Fig. 13 employing a conventional tractor unit 21, trailing end road-going "Servant bogie" 17 as before described together with an intermediate articulation "Servant bogie" 25. This last mentioned item has two fifth-wheel coupling plates with additional upward-acting bolts as described, for the railway-going form, able to rotate horizontally but not freely. The horizontal rotation of the couplings would be interlocked with each other and, or with steerable axles so as to obviate jack-knifing and provide a complete road train offering more positive steering to all the trailing axles, reducing tyre scrub, corner cutting and the tendency for trailing vehicles in multiple vehicle road trains to wander about when the leading prime mover is travelling a straight course at speed. Variations on this intermediate bogie might have one axle steered or both, have three or more axles, be equipped with cross-country or ballon-tyres for trans-desert routes or carry engines and powered axles controlled remotely from the leading prime mover.

On railway administration such as those belonging to the Association of American Railroads or the Indian Metre guage where the level of the coupling/buffer attachment is closer to rail level than would be compatible with the use of "kingpin" and "fifth-wheel" coupling apparatus and practice as is ensampled in all the foregoing embodiments; an amended carrying/coupling arrangement may be as follows where:

Fig. 17 is a section along the centre-line of a highway-going "servant bogie".

Fig. 18 is a plan view of a highway-going "servant bogie".

Fig. 19 is a part side elevation of a low-coupling type "rail-trailer".

Fig. 20 is a part plan of a low-coupling type "rail-trailer".

Each "rail-trailer" (10) is equipped with two couplings (30) of, for example, AAR type E or F at each end attached to the vehicle in such a way as to permit rotation about an upwardly extending axis to, for example, 60° of arc to either side of the centre-line of the vehicle in the horizontal plain and at such a level as is the normal practice of the railroad on which it is to be used. The adjacent underside panels of the vehicle (31) are to have such stiffness and be connected to the vehicle load-carrying structure in such a way as to permit the weight of the vehicle to be borne by roller bearings (32) mounted on the towing highway tractor and "servant bogies".

Each towing highway tractor and "servant bogie" has a pair or pairs of bearings (32) mounted each side of the centre-line of these

units in such a way as to transmit the vertical foces and accelerations between rail vehicle and highway going unit. Each highway-going unit is also equipped with a railroad coupling (33) which engages with that of the "rail-trailer" so as to transmit the axial forces and accelerations between rail vehicle and the highway-going units. The arrangement of these devices on the tractor is such as to hold the mated couplings in line, along the centre-line of the tractor, while permitting relative rotation between tractor and "rail-trailer" about the upwardly extending axis of the "rail-trailer" AAR coupling mounting (30). The trailing end highway-going "servant bogie" (17) is arranged in such a way as to resist such relative rotation, having upward acting bolts or spigots which engage with rebates or sockets in the bearing plate on underside of the "rail-trailer".

Fig. 21 shows a "rail-trailer" of this type prepared for highway movement as Fig. 6.

Fig. 22 is a section along the centre-line of a railway "servant bogie" (34) as might be employed on the Indian broad gauge to convey a metre gauge "rail-trailer". Pairs of bearings (32) are provided at each end so as to allow metre gauge vehicles to be lifted and carried with their own couplers mated with the adjoining pair of couplers (35) fixed on the centre-line of this bogie, relative rotation being allowed at the upwardly extending axis through the "rail-trailer" coupling mounting as Fig. 20. Intermediate highway-going "servant bogies" of this type would be exactly as above except for the provision of highway as opposed to rail wheels.

The con-trailer system before described would be ideally suited to the low coupling AAR situation. The railway-going "servant bogies" (23) would not require fold clear couplings and a fully articulated train of any length could be formed using the standard bogie (23) at intermediate articulations and at the interface with Locomotive and Kaboose. If it is planned to divide the articulated train on route then two such bogies are introduced at that point in the train, such a bogie might also serve a train of Ro-Railers as an adapter unit or connect to ordinary wagons.

In all the foregoing examples box or van-type bodies have been illustrated and discussed but the conveyances could equally take the form of open flat beds, container flats—Fig. 23, hoppers, tanks, coachwork (for passenger accommodation) portable building, factory plant or the like. The substance of the invention concerns only the manner in which they are conveyed.

CLAIMS

1. A bogie for interconnecting two transport containers, the bogie having wheels mounted for rotation about at least two spaced parallel axes, the bogie being provided, at opposite end regions, with a respective coupling means by means of which the end regions of the bogie are connectable respectively to the containers thereby to interconnect the containers with the adjacent ends of the containers supported on the bogie, the coupling means permitting rotation of the containers relative to the bogie about respective upwardly extending axes.

2. A bogie as claimed in claim 1, in which each coupling means comprises a fifth-wheel coupling.

3. A bogie as claimed in claim 1 or 2, in which the wheels are rail wheels.

4. A bogie as claimed in claim 1 or 2, in which the wheels are road wheels.

5. A bogie as claimed in claim 4, in which at least some of the wheels are steerable.

6. A bogie substantially as hereinbefore described with reference to, and as shown in, Figs. 9 to 13 of the accompanying drawings.

7. A transport container comprising a base having a central region with support means for supporting the container on the ground the container on the ground the container having opposite end regions which are spaced above the ground when the container is supported on the support means, the underside of each end region being at a higher level than the base and having a respective coupling means whereby a respective wheel assembly can be placed under and coupled to each end region of the base thereby to support the container with the support means clear of the ground, the container being constructed such that it is capable of withstanding a tensile or compressive load between its end regions of at least 180,000 kilograms force.

8. A transport container substantially as herein described with reference to, and as shown in, Figs. 7 and 8 of the accompanying drawings.

9. In combination, a transport container as claimed in claim 6 or 7 and two wheel assemblies, wherein

the coupling means and the wheel assemblies are adapted to cooperate in such a way that displacement of each wheel assembly towards the central region for engagement with the respective coupling means causes the respective end regions to be lifted.

10. A combination as claimed in claim 9, in which each wheel assembly comprises a bogie as claimed in any of claims 1 to 6.

11. A bogie for supporting a wheeled rail wagon, the bogie having wheels mounted for rotation about at least two spaced parallel axes and being provided with a coupling means for cooperation with coupling means provided on the wagon to secure the bogie to the wagon such that an end region of the wagon is supported on the bogie, said coupling means provided on the wagon being adapted to couple the wagon, when not sup-

ported on the bogie, to a wheeled unit to form an articulated assembly.

12. A bogie as claimed in claim 11, which is provided with roller means for supporting the wagon on the bogie for longitudinal displacement to bring the respective coupling means on the wagon and the bogie into engagement with each other.

13. A bogie as claimed in claim 11 or 12, which is provided with means for preventing relative rotation between the wagon and the bogie about an upwardly extending axis when the end region of the wagon is supported on the bogie.

14. A bogie as claimed in claim 11, 12 or 13, which is provided with two such coupling means whereby the bogie can be connected to two such rail wagons each coupling means provided on the bogie being for cooperation with the coupling means of a respective one of the rail wagons to secure the bogie to the wagons such that the end region of each wagon is supported on the bogie.

15. A bogie as claimed in any one of claims 11 to 14, in which the or each coupling means provided on the bogie is fixed with respect to the bogie.

16. A bogie as claimed in any one of claims 1 to 15, in which the wheels are road wheels.

17. A bogie as claimed in any one of claims 1 to 16, which is adapted to be driven beneath the end region of the wagon thereby to raise that end region to cause that region to be supported by the bogie.

18. A bogie substantially as hereinbefore described with reference to, and as shown in, Figs. 17 and 18 or Fig. 21 of the accompanying drawings.

19. An intermodal transport system comprising:

a rail wagon having an end region provided with a coupling means adapted to couple the wagon to a wheeled unit to form an articulated assembly, and being provided with rail wheels adopted for a first mode of transport;

a drive means adapted for a second mode of transport and connectible to the opposite end region of the wagon; and

a bogie as claimed in any of claims 11 to 18 whose wheels are adapted for the second mode of transport, whereby the wagon can selectively be conveyed by (a) the first mode of transport when drawn by a locomotive and (b) the second mode of transport when drawn by the drive means and supported on the bogie.

20. A system as claimed in claim 16, in which the rail wheels of the wagon are adapted for a railway of one gauge, and wherein the wheels of the drive means and the bogie are rail wheels adapted for a railway of another gauge.

21. A system as claimed in claim 16, in which the wheels of the drive means and the bogie are road wheels.

Printed in the United Kingdom for
Her Majesty's Stationery Office, Dd 8818935, 1985, 4235.
Published at The Patent Office, 25 Southampton Buildings,
London, WC2A 1AY, from which copies may be obtained.