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(72) Inventor: **Ashley-Smith, Andrew**
Coventry, West Midlands CV3 6PS (GB)

(74) Representative: **Dempster, Benjamin John Naftel**
Withers & Rogers LLP
Goldings House
2 Hays Lane
London
SE1 2HW (GB)

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(71) Applicant: **Ashley-Smith, Andrew**
Coventry, West Midlands CV3 6PS (GB)

(54) **A railway system, a railway carriage and a railway siding**

(57) A railway carriage to be transported on a railway system includes a living area (164), a bathroom (36), a sleeping area (26) and a kitchen area (62). Appliances (40, 42, 75) in the bathroom (36) and kitchen area (62) are connected to a common potable water supply system (170). The railway carriage includes a potable water connector (136) to releasably connect the potable water supply system (170) of the carriage to an external water supply.

The appliances (40, 42, 73) in the bathroom (36) and kitchen area (62) are also connected to a common waste water system (172). The railway carriage includes a waste water connector (138) to releasably connect the waste water system (172) of the carriage to an external waste system, such as a drain. The potable water connector (136) and the waste water connector (138) are provided on a common mounting (132).

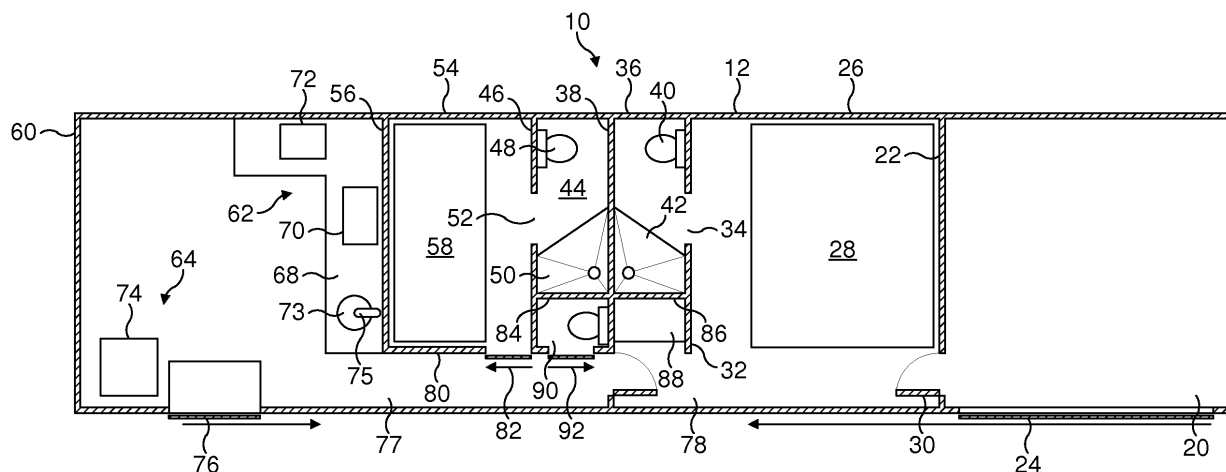


FIG. 1

Description

[0001] The invention relates to a railway system, a railway carriage and a railway siding.

[0002] Known railway systems include a plurality of sidings linked by track, and also include carriages and trucks to be pulled by locomotives on the track.

[0003] A known carriage has a plurality of seats for passengers and may have a toilet for their use. The toilet comprises a partitioned room in the carriage with a WC and basin within it.

[0004] The British Royal family has a train consisting of a plurality of carriages. The Queen's carriage has a bedroom, bathroom and a sitting room with an entrance which opens onto the platform of a railway station.

[0005] According to one aspect of the invention there is provided a railway system including a plurality of special carriages and a plurality of special sidings the special sidings being in a plurality of different geographical locations, each special carriage including a living area, a bathroom, a sleeping area and a kitchen area, each special siding including living facilities including a source of potable water and a waste deposit resource, wherein a coupling is provided to releasably couple the source of potable water to an inlet of a special carriage for supply of potable water in the special carriage, and a coupling is provided to releasably couple the waste deposit resource to a waste outlet of a special carriage the couplings being arranged to be connected through a common coupling device so that the special carriages can be moved around the railway system and on arrival at any of the special sidings a special carriage can be releasably connected to a supply of potable water and to a waste deposit resource through the common coupling device.

[0006] By means of the system of the invention, a person or group of people, such as a family, can live on board a special carriage whilst the carriage is stationary at a special siding and can be on the carriage while it is moving between sidings. The special carriage is self sufficient. Thus, a family may board their special carriage at a special siding close to their home, and the special carriage may be collected by a locomotive going to the required destination. Travelling is achieved without the need for one member of the family to drive and in a spacious comfortable environment with all required possessions on board. Once at the destination, the family can live in the special carriage in the special siding, as they have all they require.

[0007] At least one special carriage in the system may include a space to receive a vehicle. The vehicle may be any desired type of vehicle, such as a bicycle or motorcycle, and in one preferred embodiment is a car. In this way, the occupant or occupants of the special carriage have a means of road transport with them.

[0008] The living facilities of the special siding may include a power source. In this way, power is available to a special carriage in the special siding. Preferably means is provided to connect the siding power source to an input

of the special carriage.

[0009] The common coupling device may be arranged to be operated on docking of the special carriage at a special siding.

[0010] The system may include at least one special area including capacity for a plurality of special carriages to be parked on one or more special sidings in the area, the space for each special carriage in the special area including the said living facilities. Each special area may be in a desirable destination such as in a city or at a non-urban tourist destination, such as the seaside.

[0011] At least one special carriage may comprise a flat car and at least one freight container thereon, the freight container or freight containers on the flat car defining the living area, bathroom, sleeping area and kitchen area. In this way one or more standard freight containers can be used in implementation of the invention, which may be less expensive.

[0012] The bathroom of the special carriage preferably includes a shower and/or a bath.

[0013] The kitchen of the special carriage preferably includes at least two means of cooking, and may include three means of cooking. The means of cooking may include one or more of a hob, oven, microwave oven and steam oven.

[0014] A resource unit may be provided on the special siding for connection to the special carriage by the common coupling.

[0015] The siding preferably includes a buffer and the carriage and resource unit are preferably arranged to be aligned for connection by the common coupling when the carriage abuts the buffer. Means is preferably provided to allow for limited movement of at least one part of the coupling to allow for minor misalignment.

[0016] The coupling may take any suitable form and may comprise a male part and a female part. The female part is preferably on the siding and may include a cover above it.

[0017] The coupling preferably includes a part which is moved into position to make the connection. The moveable part may move in any suitable way, such as by translation, but preferably is moved by pivoting. The coupling may include guide means to guide the parts together.

[0018] According to another aspect of the invention there is provided a railway carriage for use as a special carriage in the railway system of the first aspect of the invention.

[0019] According to another aspect of the invention there is provided a siding for use as a special siding in the system of the first aspect of the invention.

[0020] According to a further aspect of the invention there is provided a railway carriage to be transported on a railway system, the railway carriage including a living area, a bathroom, a sleeping area and a kitchen area, appliances in the bathroom and kitchen area being connected to a common potable water supply system, the railway carriage including a potable water connector to releasably connect the potable water supply system of

the carriage to an external water supply, the appliances in the bathroom and kitchen area being connected to a common waste water system, and the railway carriage including a waste water connector to releasably connect the waste water system of the carriage to an external waste system, such as a drain, wherein the potable water connector and the waste water connector are provided on a common mounting.

[0021] According to another aspect of the invention there is provided a flat car including a plurality of first connectors on a common mounting for simultaneous connection to complementary connectors beside a railway track, the first connectors including a connector for potable water and a connector for waste, the flat car further including transmission means, such as pipes, linking the first connectors to second connectors for connection to external systems including a potable water supply system and a waste system of a freight container or freight containers to be carried on the deck of the flat car

[0022] According to a further aspect of the invention there is provided a coupling device for use between a railway carriage and a unit at a siding, the coupling device including male and female connections for a plurality of resources including male and female connections for potable water and male and female connections for waste deposit, the coupling device being arranged to be moved into place to connect the plurality of resources simultaneously.

[0023] The coupling device may be arranged to be moved in any suitable manner and may be arranged to be moved by pivoting.

[0024] Embodiments of the invention will now be described by way of example and with reference to the accompanying drawings, in which:

Fig. 1 is a plan view in cross section of a carriage in an embodiment of the invention;

Fig. 2 is a side elevation of the carriage of Fig. 1;

Fig. 3 is a plan view of a siding in the embodiment of Fig. 1;

Fig. 4 is an elevation of the siding of Fig. 3 viewed perpendicularly to the track;

Fig. 5 is an elevation of the siding Fig. 3 viewed parallel to the track;

Fig. 6 is a front elevation of the siding connection;

Fig. 7 is a front elevation of the connection on the carriage; and

Fig. 8 is a side elevation of the connection on the carriage.

Fig. 9 is a plan view of the carriage of Fig. 1 showing

the water, waste and electrical circuits.

[0025] The system 10 of the embodiment comprises a plurality of special carriages 12 and a plurality of special sidings 14.

[0026] Figs. 1 and 2 show a special carriage 12. The special carriage 12 comprises a standard UK freight container 8 of dimensions 40ft/12.19m long and 8ft/2.44m wide, on a flat car 6.

[0027] At the right hand end of the special carriage 12 as seen in Fig. 1, a room 20 is defined by a partition 22.

[0028] The room 20 has a sliding door 24 in the side of the carriage 12 over the full length of the room 20 for optimum access. The room 20 may be used for storage or to park a car (not shown) to be taken with the occupants on their journey. A Smart (registered trade mark) car is short enough to drive straight into the room 20 which therefore serves as a garage. Bicycles or motorbikes could also be stored in the room 20, which could simply be a general area for storage.

[0029] The next room 26 can serve as a double bedroom. A king size double bed 28 is shown in the room 26. A door 30 in the partition 22 leads from the garage 20 into the double bedroom 26. Opposite the partition 22 is a partition 32 with a doorway 34 to an en suite bathroom 36 defined between the partition 32 and another transverse partition 38. The en suite bathroom 36 includes a toilet 40 and a shower cubicle 42 with shower head 43 as well as a basin (not shown). The en suite bathroom 36 to the double bedroom 26 is back to back with another en suite bathroom 44 defined between the partition 38 and another transverse partition 46. The second en suite bathroom 36 also includes a toilet 48, shower cubicle 50 with shower head 51 and a basin (not shown).

[0030] The partition 46 has a doorway 52 to a single bedroom 54 defined between the partition 46 and another transverse partition 56. The single bedroom 54 includes a single bed 58 or bunk beds.

[0031] The bedrooms 26, 54 constitute the aforesaid "sleeping area".

[0032] Between the partition 56 and the end 60 of the carriage 12 is defined a combined kitchen area 62 and living area 64.

[0033] The kitchen area 62 includes a work surface 66 with cupboards underneath (not shown) and two means of cooking 70, 72 which may be an oven and a hob. A refrigerator (not shown) is provided under the work surface 68. A sink 73 with a tap 75 is provided in the work surface 66. A table 74 is shown in the living area 64 and chairs (not shown) are also in this area. A sliding door 76 leads into the living area 64.

[0034] The partitions 56, 46, 38 and 32 do not extend right across the carriage 12 so that a corridor 77 is defined down one side of the carriage 12 leading to a door 78 to the double bedroom 26. The single bedroom 54 is delineated by a longitudinal partition 80 with a sliding door 82.

[0035] The en suite bathrooms 36, 44 are delineated by longitudinal partitions 84, 86 which lie before the ends

of the partitions 46, 38, 32 so that a storage area 88 is defined between the double bedroom's en suite 36 and the corridor 77, and so that a guest toilet 90 with a sliding door 92 is arranged between the single bedroom en suite 44 and the corridor 77.

[0036] The rooms are lit by electric lights 160 in the ceiling 162 of the carriage 12. Electrical sockets 164 are provided so that appliances, including the oven 70, hob 72 and refrigerator, may be plugged in, see Fig. 9.

[0037] Figures 3, 4 and 5 show a siding 14. The siding 14 as shown in the Figures includes track 98 having rails 100 on sleepers 102 leading to buffers 104 on a concrete end wall 106. A platform 108 lies alongside the track and mounts a female part 110 of a coupling 112, the female part 110 forming the front of a resource unit. The female part 110 is mounted on the vertical side wall 114 of the platform 108 facing the rails 100.

[0038] The female part 110 has a generally square front face 116 from which guide plates 118 flare at an obtuse angle to the front face 116. The guide plates 118 are provided to either side and below the front face 116. Above the front face 116 is a cover 120 which protrudes above the front face 116. The front face 116 is flush with the side wall 114 of the platform 108. The front face 116 defines three apertures. Two smaller apertures 122, 124 are provided above a larger aperture 126. One small aperture 122 is an electricity socket wired to the mains or another electrical source. The other small aperture 124 is connected to the mains water supply or another supply of potable water. The large aperture 126 is connected to the main drain or another waste water outflow. The female part 110 forms the aforesaid "resource unit".

[0039] The male part 130 of the coupling 112 is shown in Figs. 2, 7 and 8. The male part 130 is provided on the carriage 12 and comprises a generally rectangular front plate 132 through which three connectors 134, 136, 138 extend in complementary positions to the apertures 122, 124, 126 in the female part 110. Each connector 134, 136, 138 is tapered at its end to help guide it into the respective aperture 122, 124, 126. Thus, one smaller connector 134 is an electrical plug to enter the socket 122. The other smaller connector 136 is a pipe to receive potable water from aperture 124, whilst the large connector 138 is a pipe through which waste can pass into the drains through large aperture 126. The electrical plug connector 134 is connected through a flexible cable 180 to the electrical systems 166, 168 of the carriage 12 to supply the electric lights 160 and sockets 164, respectively. The flexible cable 180 includes a releasable connection 182 to allow the freight container 8 to be removed from the flat car 6. The potable water connector 136 is connected through a flexible hose 184 to the potable water supply system 170 of the carriage 12 for the taps 75, showers 43, 51 and toilets 40, 48 of the carriage 12. The waste connector 138 is connected through a flexible hose 186 to the waste water pipe system 172 of the carriage 12 which connects to the toilets 40, 48 and to the drains of the sink 73 and en suite basins of the carriage 12.

Each flexible hose 184, 186 includes a releasable connection 188, 190 to allow the freight container 8 to be removed from the flat car 6.

[0040] The front plate 132 carries a sleeve 152 on either side which receives a rod 142. Each rod 142 is connected through a perpendicular element 140 at its upper end to one of a pair of depending struts 144. Each strut 144 includes an aperture 146 to receive a horizontal spindle 148 so that the male part 130 can pivot on the spindle 148. The position of the front plate 132 with respect to the length of the spindle 148 can be adjusted by means of sleeves 150 on the spindle 148. The height of the front plate 132 with respect to the spindle 148 can be adjusted by means of the sleeves 152.

[0041] In use, the occupants of the carriage, say a family, drive to a special siding 14 where their special carriage 12 is located in the system 10. They then board the carriage 12 with their luggage and wait to be collected by a locomotive. The locomotive might make a dedicated trip with the carriage 12, but it is more likely that the carriage 12 will be added to a train being pulled by the locomotive to go to the desired destination. The destination might be a city or a rural tourist destination, such as the seaside. At the destination, the special carriage 12 is shunted into a special siding 14 until buffers 4 on the carriage 12 engage the buffers 104. An occupant can then descend from the carriage 12 on to the platform 108 and pivot the male part 130 of the coupling 112 about the spindle 148 so that the connectors 134, 136, 138 are received in the apertures 122, 124, 126 of the female part 110. The guide plates 118 help to guide the male part 130 into position, as do the tapered ends of the connectors 134, 136, 138. If there should be misalignment between the male and female parts 130, 132, the position of the male part 130 on the carriage 12 can be adjusted by means of the sleeves 150, 152. Once the connection is made, the carriage then has working plumbing and an operational electrical system. The family can live in the carriage 12 and treat it as their home for the duration of their stay.

[0042] When it is time to depart, the male part 130 of the coupling 112 is simply pivoted back underneath the carriage 12 and the carriage 12 is then ready to be collected by a locomotive and returned home or to the next destination.

[0043] The finish and fittings inside the carriage 12 and the length of the carriage 12 can be dependent upon the specifications of the designer. Thus shorter or longer carriages are envisaged within the scope of the invention, and different internal layouts will also be possible. The carriage 12 can have as many windows and doors as determined by the design.

[0044] The carriage 12 can be fitted with smoke alarms and a fire detection/sprinkler system, as required.

[0045] The carriage 12 provides all the domestic needs of the occupants whilst at the same time being fully self sufficient whilst moving between special sidings offering the required facilities.

[0046] The freight container 8 may be transferred from

the flat car 6 using existing container handling systems on to other means of transport, for example a truck or boat, for transport to other destinations, for example overseas, where it may be deposited or transferred onto another flat car of the appropriate gauge for the local railway system for further travel.

[0047] A special area for special carriages may include a plurality of the special sidings 14, each able to take one special carriage 12. Alternatively or additionally, one or more special sidings 14 may be arranged to receive more than one special carriage 12. In that case, there may be a resource unit such as the female part 110, for each special carriage 112 at suitable spacings along the siding 14. Alternatively, there may be a single resource unit at the end of the special siding 14, and the special carriage 12 may have a coupling at each end, which may be an equivalent of the coupling 112, so that another special carriage 12 behind it in the siding 14 can be connected to the water, waste and electrical systems of the carriage 12 in front, which in turn is connected to the resource unit of the special siding 14. In this way a number of carriages 12 can be linked together to take advantage of a single resource unit.

[0048] Sidings to form the required special sidings 14 may already exist in city centres where existing track is under-used, and dedicated parks could be constructed in tourist destinations such as at the seaside or other scenic places.

[0049] In a further embodiment, the carriage 12 may incorporate a wood burning stove.

[0050] In another embodiment, the carriage 12 may include solar panels which may reduce or obviate the need for supply of electrical power to the carriage. Alternatively or additionally, the carriage 12 may include batteries to be charged by an alternator to form an electrical supply.

[0051] In another embodiment, the carriage may be composed of more than one freight container on a flat car. The rooms will thus be defined in the freight containers and adjacent containers may be linked through a communicating door.

[0052] In another embodiment, the special carriage, instead of being a freight container 8 on a flat car 6, may be a dedicated integrated unit. In that case the special carriage may be an adaptation of an existing passenger carriage.

Claims

1. A railway carriage to be transported on a railway system, the railway carriage including a living area (164), a bathroom (36), a sleeping area (26) and a kitchen area (62), appliances (40, 42, 75) in the bathroom (36) and kitchen area (62) being connected to a common potable water supply system (170), the railway carriage including a potable water connector (136) to releasably connect the potable water supply

system (170) of the carriage to an external water supply, the appliances (40, 42, 73) in the bathroom (36) and kitchen area (62) being connected to a common waste water system (172), and the railway carriage including a waste water connector (138) to releasably connect the waste water system (172) of the carriage to an external waste system, such as a drain, wherein the potable water connector (136) and the waste water connector (138) are provided on a common mounting (132).

2. A railway carriage as claimed in claim 1, wherein the carriage includes an electrical system (166; 168) and the carriage includes an electrical connector (134) to connect the electrical system (166; 168) of the carriage to an external power supply, and preferably the electrical connector (134) is provided on the common mounting (132).

3. A railway carriage as claimed in claim 1 or claim 2, wherein the common mounting (132) is arranged to be moved into place to make the connection, and preferably the common mounting (132) is arranged to be moved by pivoting to make the connection, and preferably means (148, 150, 142, 152) is provided to allow for movement of the common mounting (132) with respect to the body of the carriage to allow for misalignment.

4. A railway carriage as claimed in claim 1, 2 or 3, wherein the carriage defines a space (20) to receive a vehicle such as a car.

5. A railway carriage as claimed in any preceding claim, wherein the carriage comprises a flat car (6) and at least one freight container (8) thereon, the freight container (8) or freight containers on the flat car (6) defining the living area (64), bathroom (36), sleeping area (26) and kitchen area (62), and optionally the common mounting (132) is on the flat car (6).

6. A railway carriage as claimed in any preceding claim, wherein the kitchen (62) of the carriage includes at least two means of cooking, preferably three means of cooking and preferably the means of cooking includes one or more of a hob (72), oven (70), microwave oven and steam oven.

7. A flat car including a plurality of first connectors (136, 138) on a common mounting (132) for simultaneous connection to complementary connectors beside a railway track, the first connectors (136, 138) including a connector (136) for potable water and a connector (138) for waste, the flat car further including transmission means, such as pipes (184, 186), linking the first connectors (136, 138) to second connectors (188, 190) for connection to external systems including a potable water supply system and a waste

system of a freight container or freight containers to be carried on the deck of the flat car

8. A railway system including a plurality of special carriages (12) and a plurality of special sidings (14), the special sidings (14) being in a plurality of different geographical locations, each special carriage (12) including a living area (64), a bathroom (36), a sleeping area (26) and a kitchen area (62), each special siding (14) including living facilities including a source of potable water and a waste deposit resource, wherein the system further includes a common coupling device (112), the common coupling device (112) comprising both a coupling (124) to releasably couple the source of potable water at a special siding to an inlet (136) of a special carriage (12) for supply of potable water in the special carriage (12), and a coupling (126) to releasably couple the waste deposit resource at a special siding (14) to a waste outlet (138) of a special carriage (12), so that the special carriages (12) can be moved around the railway system and on arrival at any of the special sidings (14) a special carriage (12) can be releasably connected to a supply of potable water and to a waste deposit resource through the common coupling device (112). 5 10 15 20 25
9. A railway system as claimed in claim 8, wherein the living facilities of each special siding (14) include a power source which may be an electrical power source, and preferably wherein a coupling (122) is provided to releasably connect the siding power source to an input (134) of the special carriage (12), and preferably the said common coupling device (112) also includes the power coupling (122). 30 35
10. A railway system as claimed in claim 8 or claim 9, wherein the coupling device (112) is arranged to be operated on docking of a special carriage (12) at a special siding (14). 40
11. A railway system as claimed in claim 8, 9 or 10, wherein a resource unit is provided on the special siding (14) for connection to the special carriage (12) by the common coupling (112), and preferably the siding (14) includes a buffer (104) and the carriage (12) and resource unit are arranged to be aligned for connection by the common coupling (112) when the carriage (12) abuts the buffer (104). 45 50
12. A railway system as claimed in any of claims 8 to 11, wherein the common coupling (112) comprises a male part (130) and a female part (110), and preferably the female part (110) is on the siding (14). 55
13. A railway system as claimed in any of claims 8 to 12, wherein the railway system includes a railway carriage as claimed in any of claims 1 to 6 or a flat car

as claimed in claim 7.

14. A coupling device (112) for use between a railway carriage and a unit at a siding, the coupling device including male and female connections (130, 110) for a plurality of resources including male and female connections (136, 124) for potable water and male and female connections (138, 126) for waste deposit, the coupling device (112) being arranged to be moved into place to connect the plurality of resources simultaneously.
15. A coupling device as claimed in claim 14, wherein the coupling device includes male and female connectors (134, 122) for a power resource such as an electrical power resource.
16. A coupling device as claimed in claim 14 or claim 15, wherein the coupling device is arranged to be moved by pivoting.
17. A coupling device as claimed in claims 14, 15 or 16, wherein the coupling device includes guide means (118) to guide the parts (110, 130) together.
18. A siding for use as a special siding in the railway system according to any of claims 8 to 13.

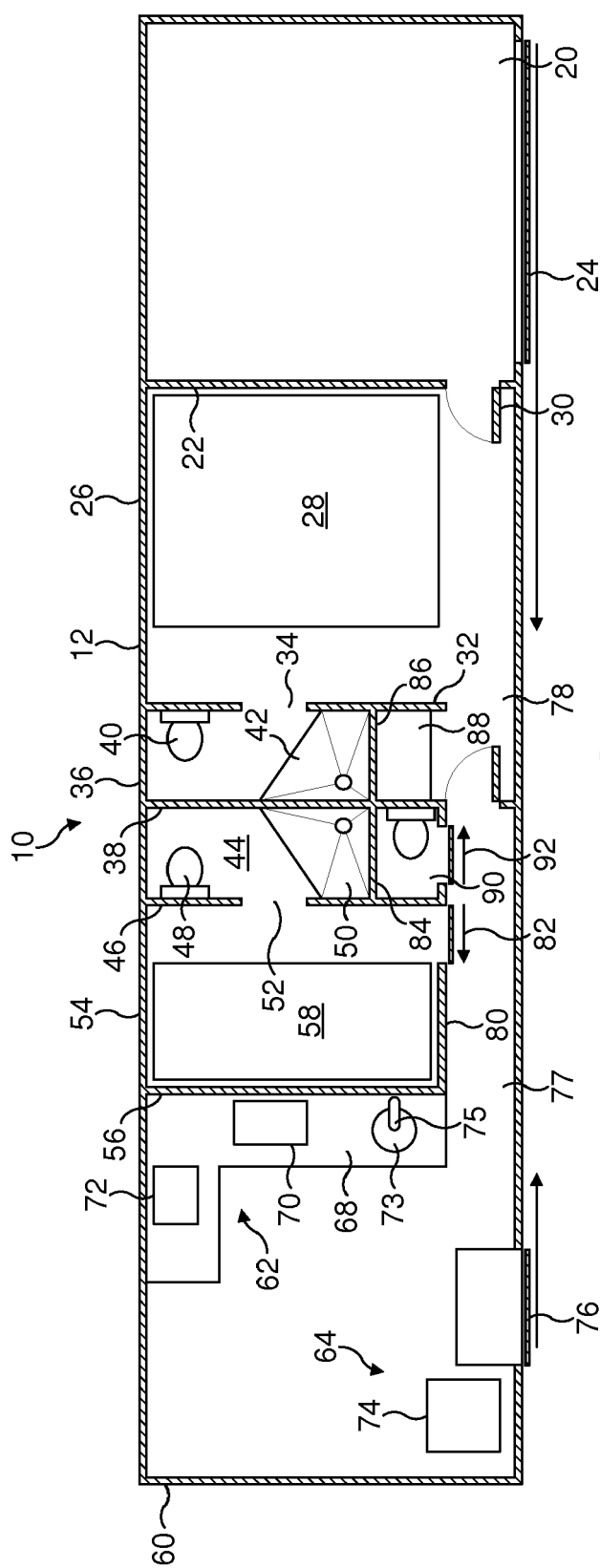


FIG. 1

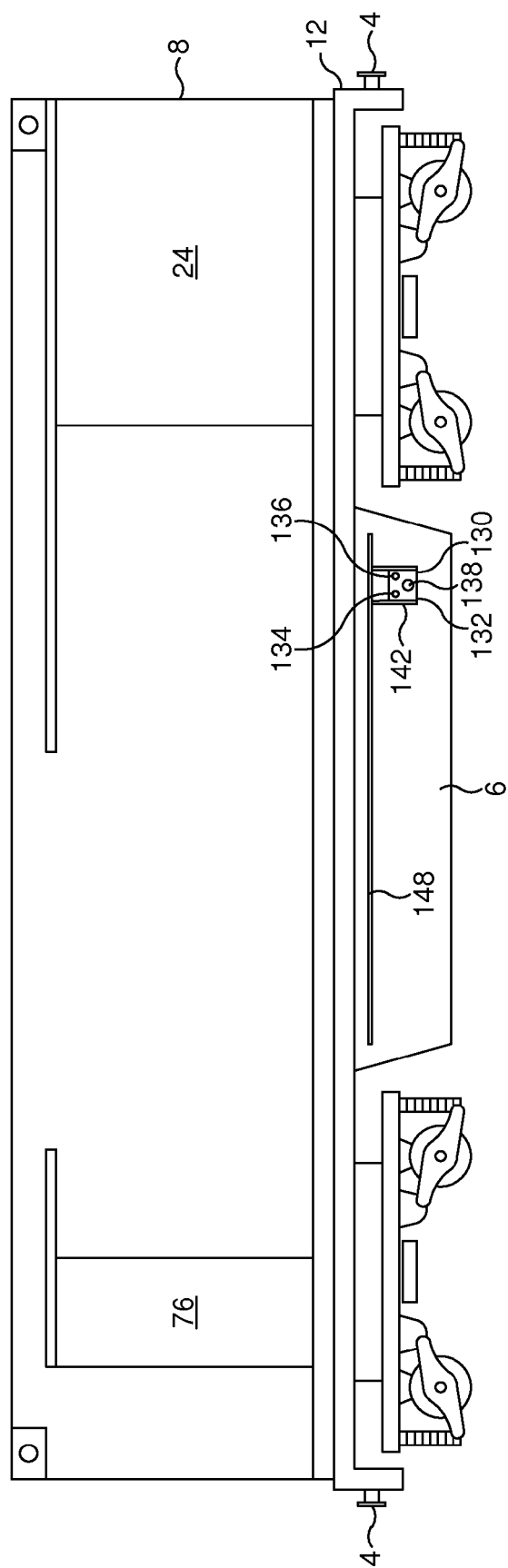
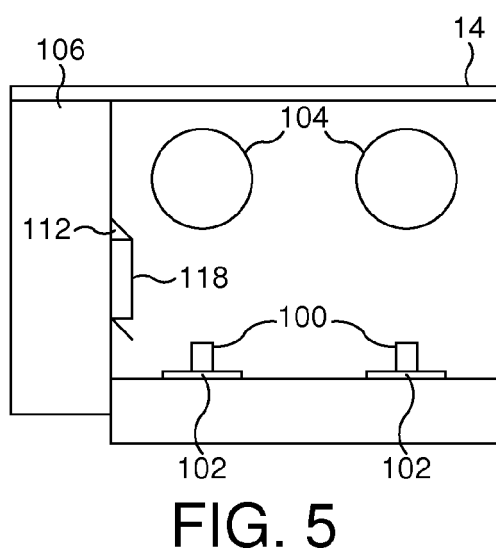
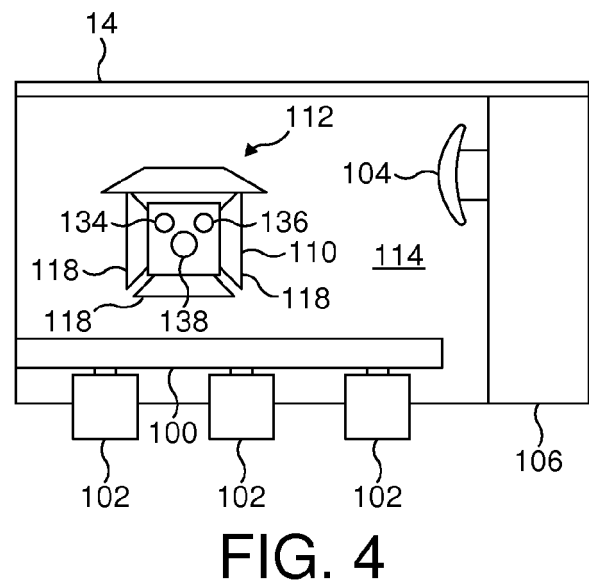
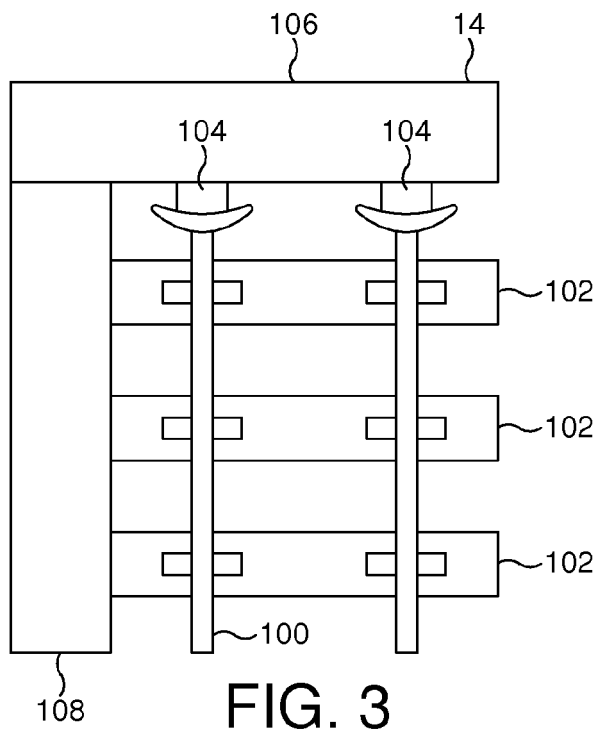


FIG. 2



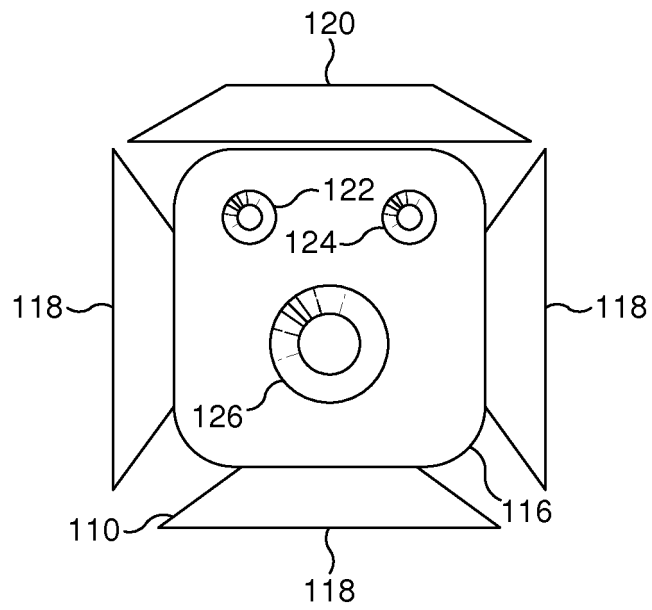


FIG. 6

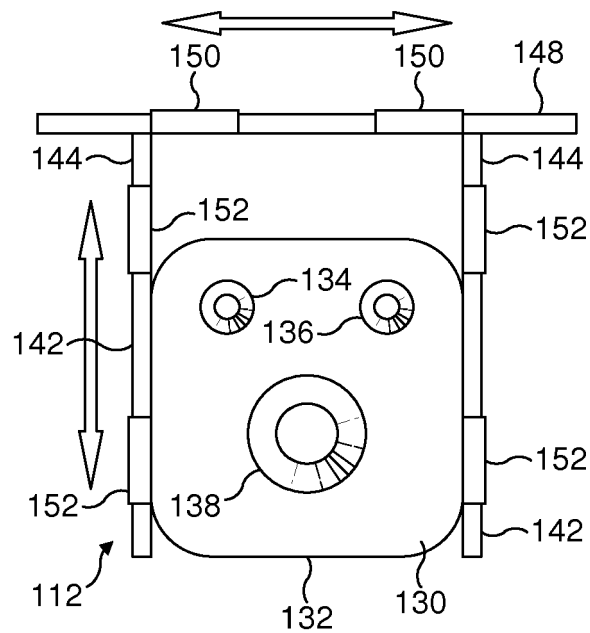


FIG. 7

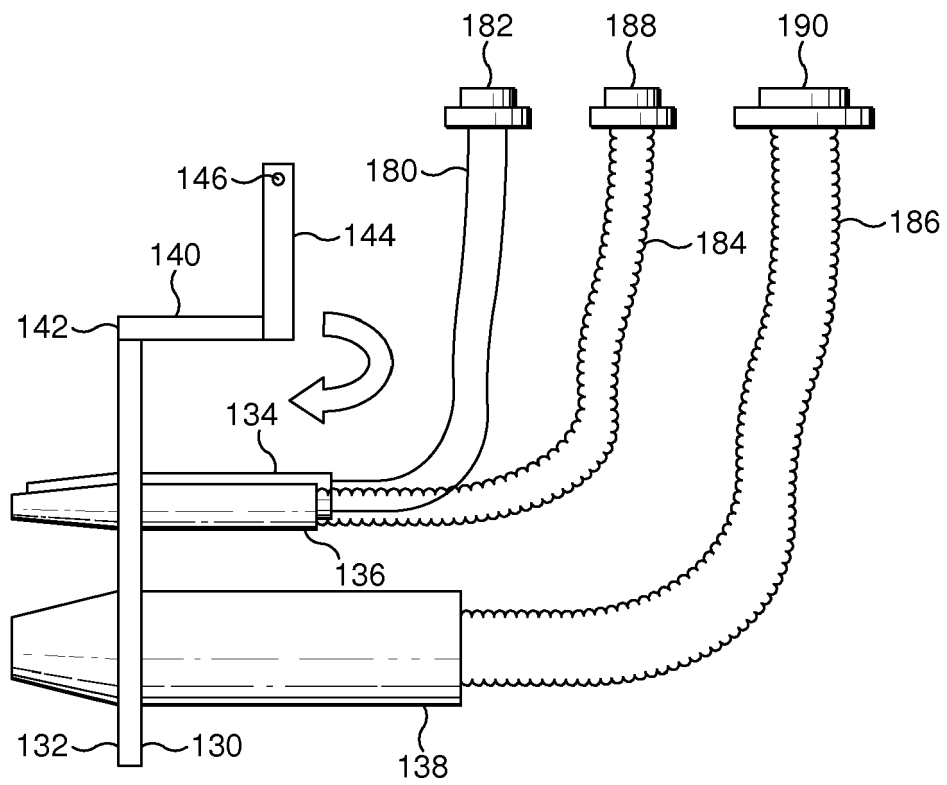


FIG. 8

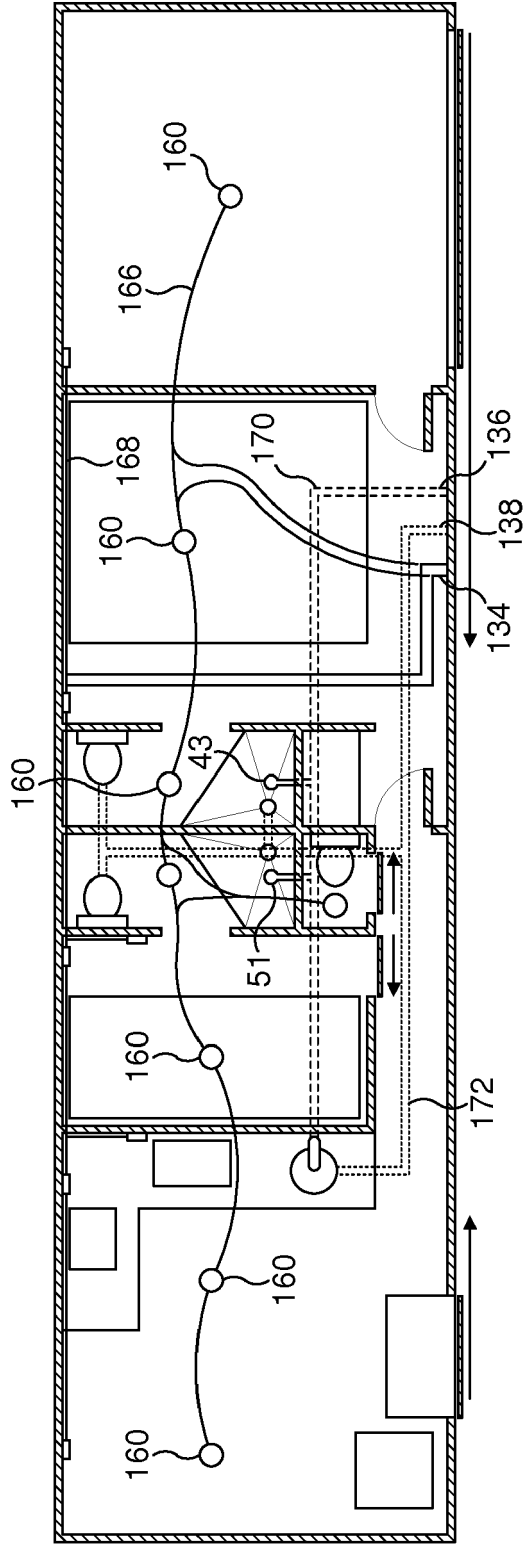


FIG. 9



EUROPEAN SEARCH REPORT

Application Number
EP 09 17 6405

DOCUMENTS CONSIDERED TO BE RELEVANT			
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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 5 March 2010	Examiner Lorandi, Lorenzo
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

3
EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 09 17 6405

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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