Aug. 9, 1949. B. E. JONES 2,478,402

RAILWAY SLEEPING CAR

Filed Aug. 24, 1944 8 Sheets-Sheet 1

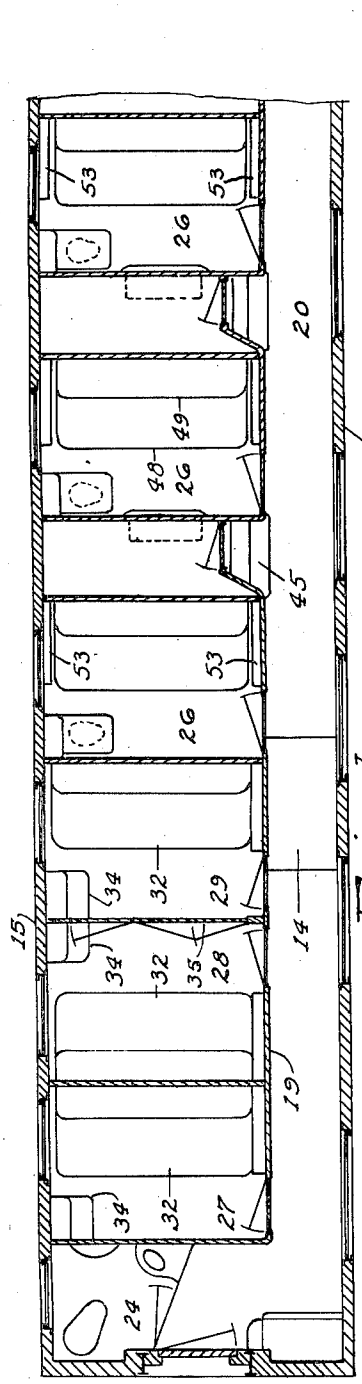


Fig. 1.

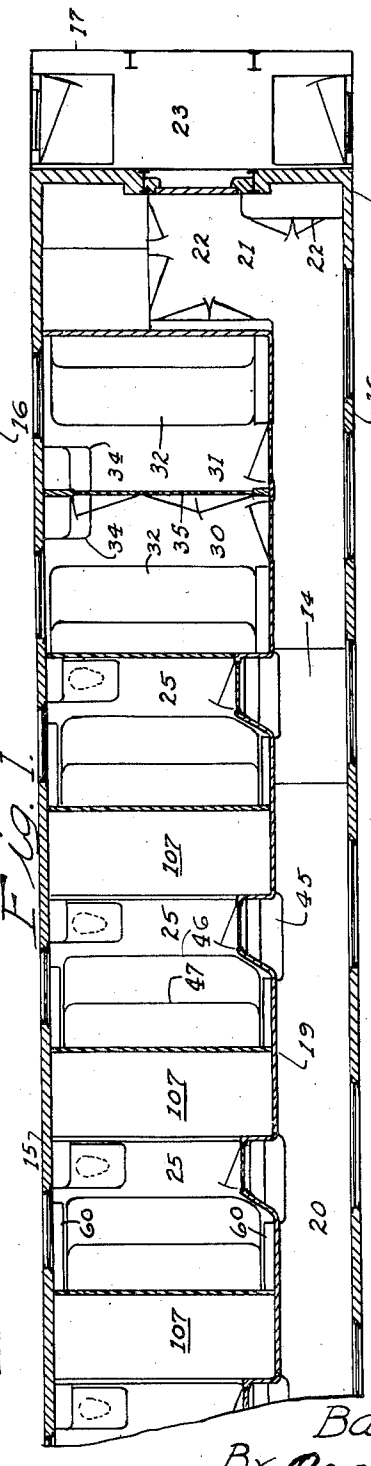


Fig. 2.

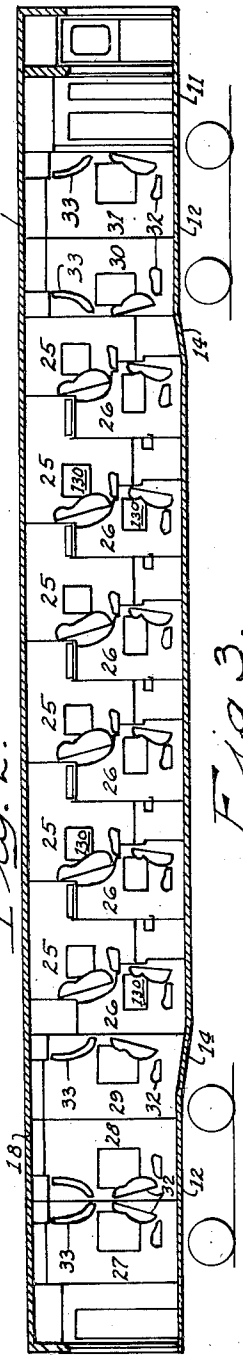


Fig. 3.

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RAILWAY SLEEPING CAR

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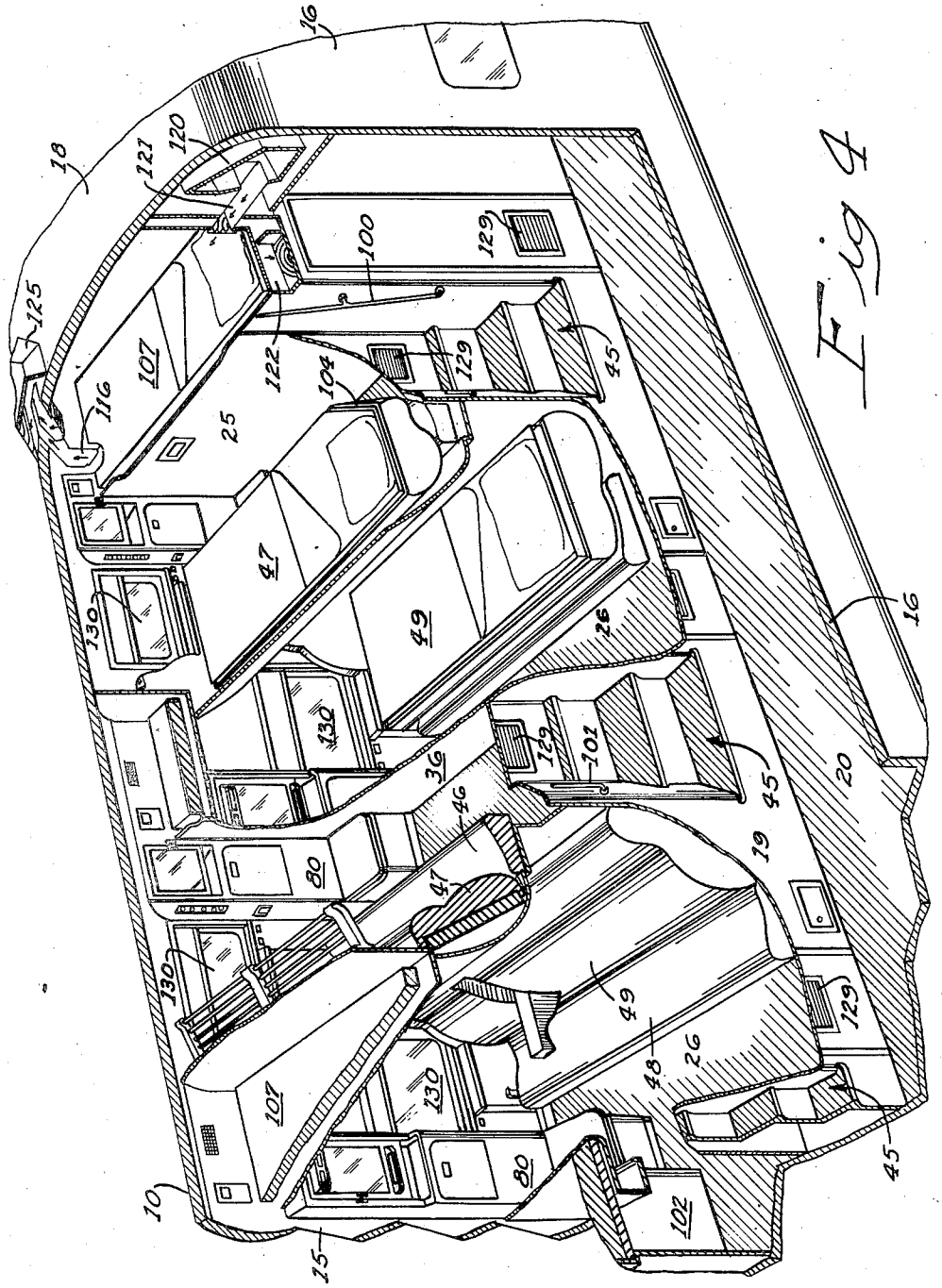


Fig 4

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RAILWAY SLEEPING CAR

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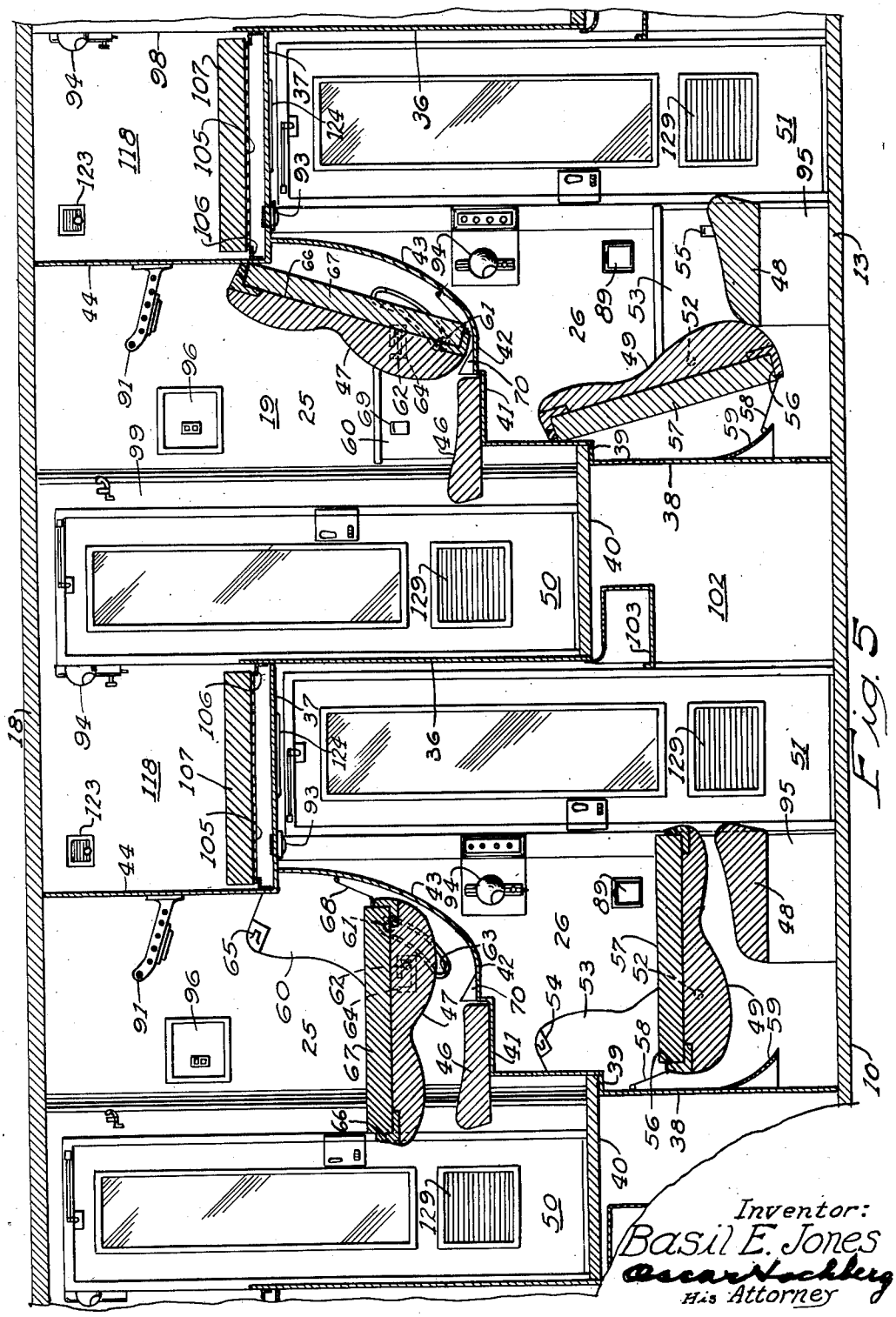


Fig. 5

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RAILWAY SLEEPING CAR

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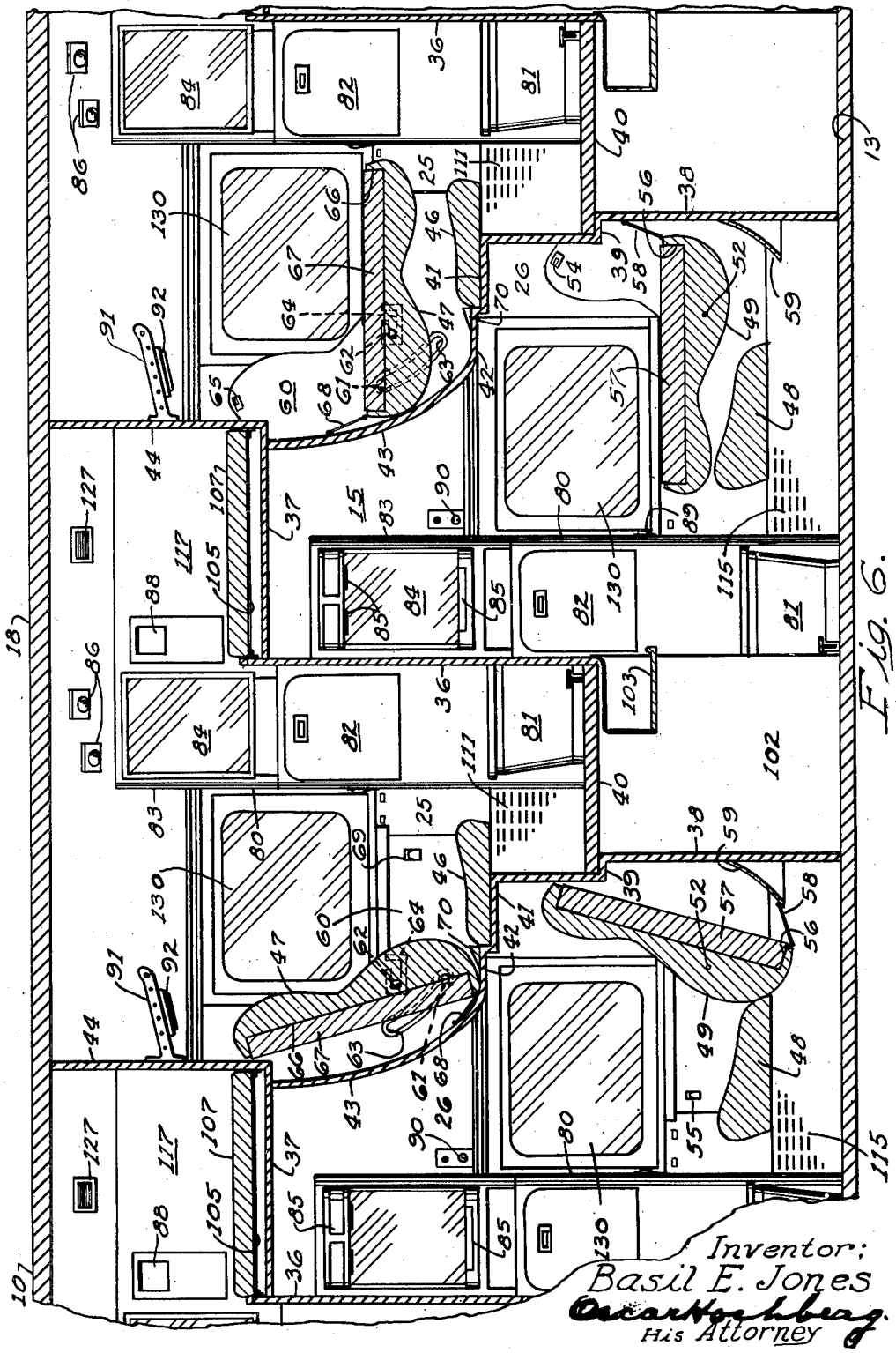


Fig. 6.

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RAILWAY SLEEPING CAR

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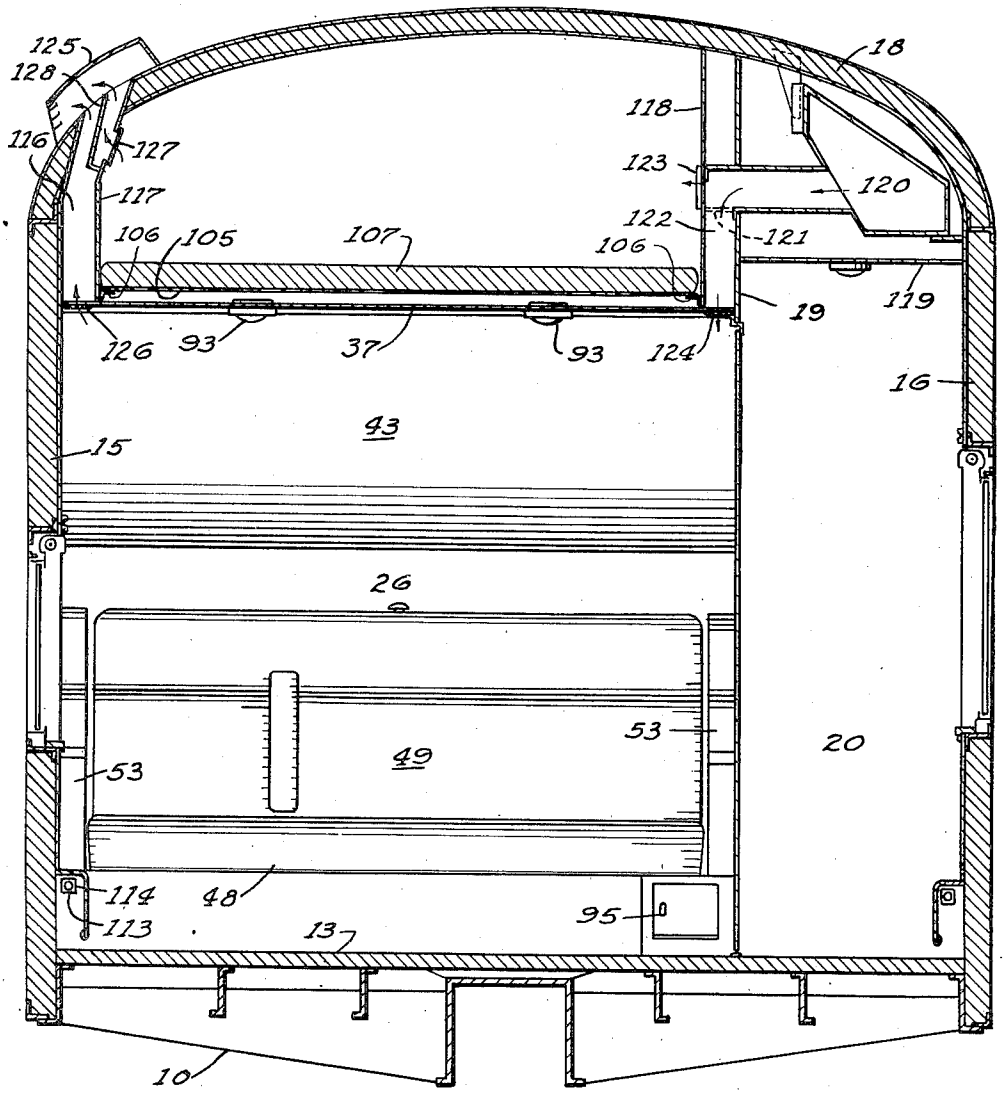


Fig. 7

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RAILWAY SLEEPING CAR

Filed Aug. 24, 1944 8 Sheets-Sheet 6

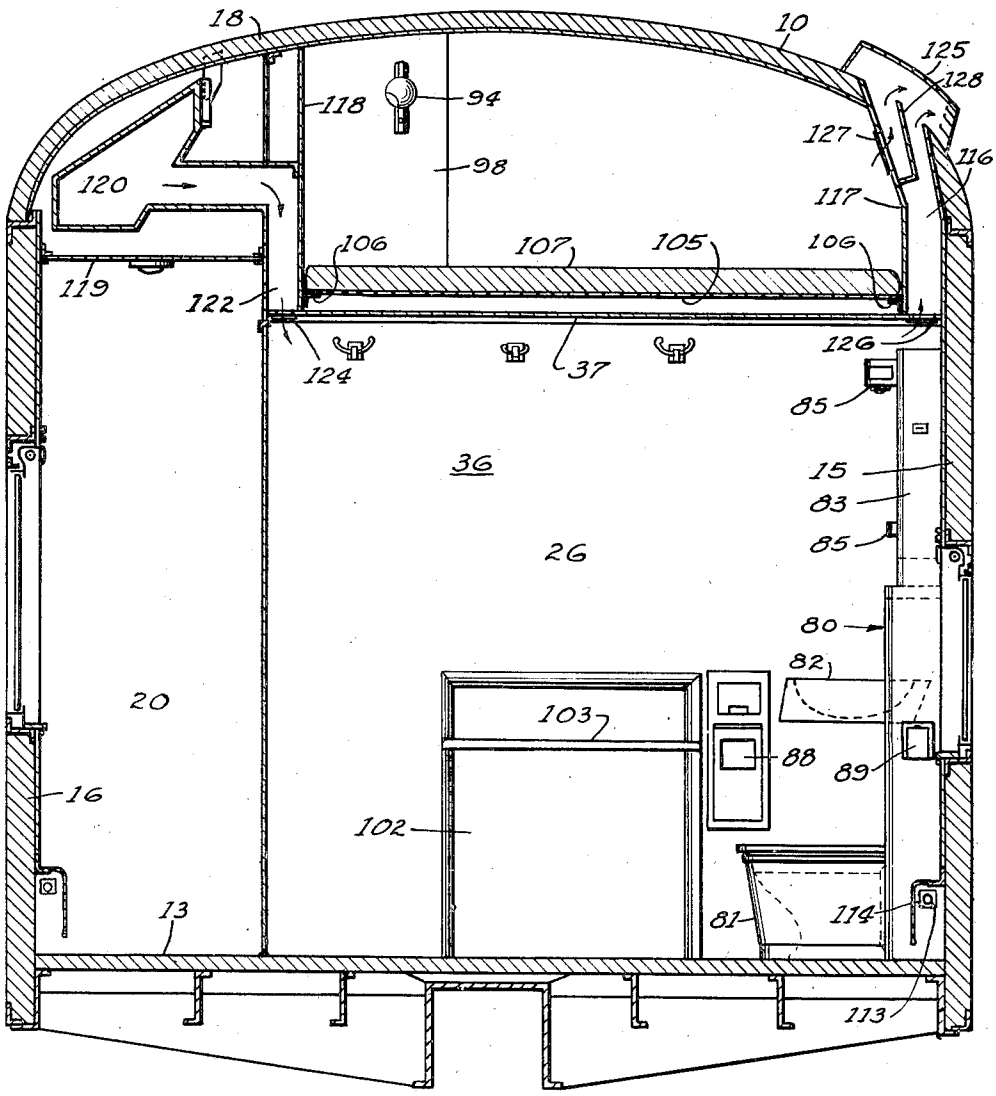


Fig. 8.

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Aug. 9, 1949. B. E. JONES 2,478,402

RAILWAY SLEEPING CAR

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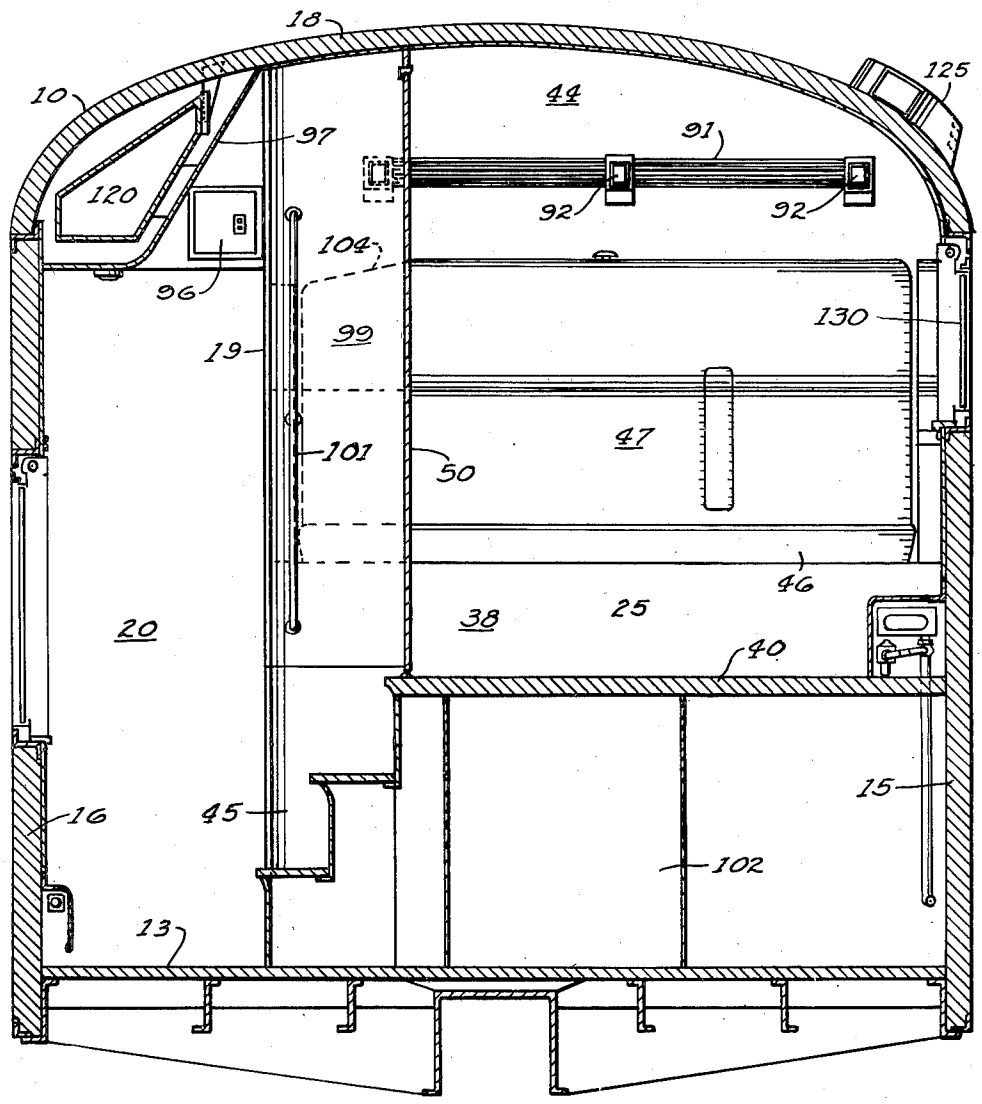


Fig. 9.

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RAILWAY SLEEPING CAR

Filed Aug. 24, 1944 8 Sheets-Sheet 8

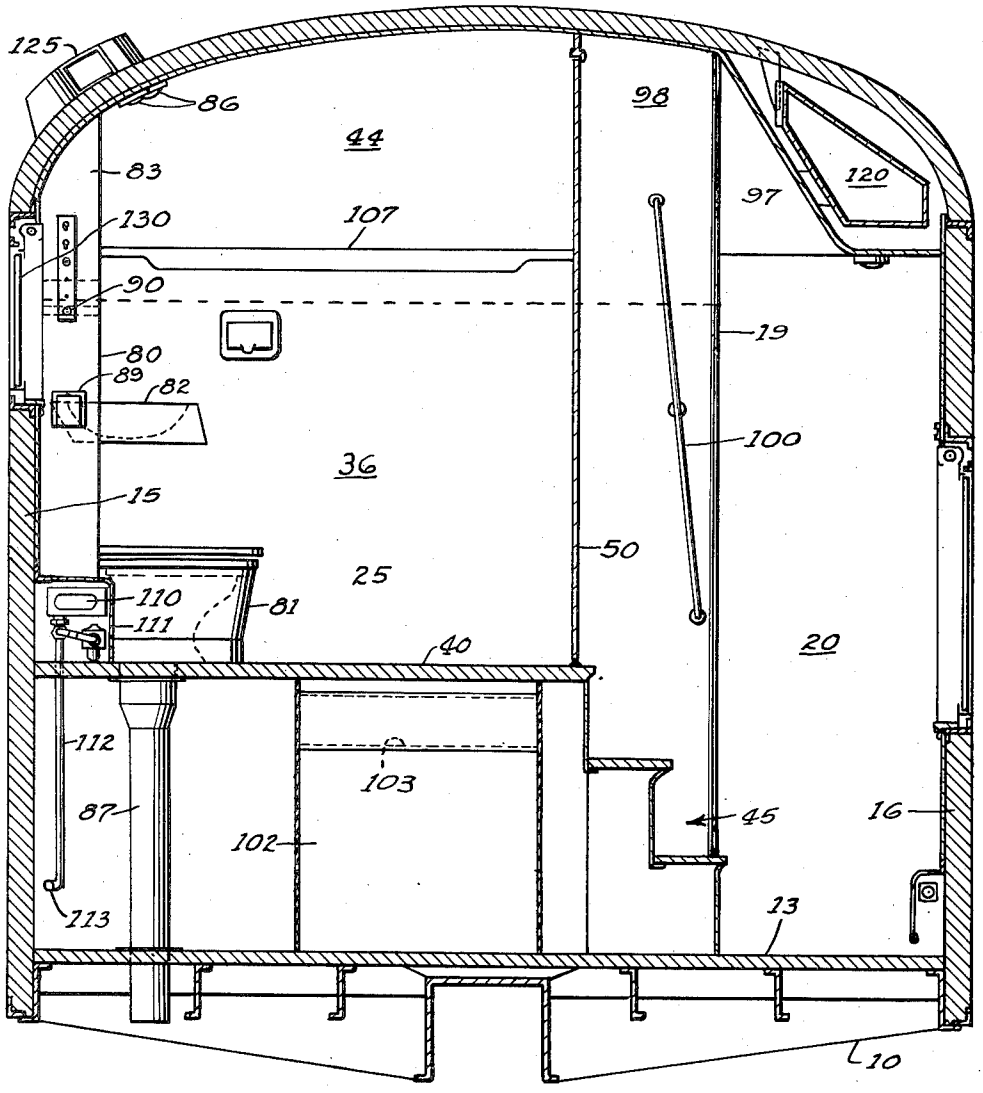


Fig 10

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2,478,402

UNITED STATES PATENT OFFICE

2,478,402

RAILWAY SLEEPING CAR

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Application August 24, 1944, Serial No. 550,911

20 Claims. (Cl. 105—315)

1

This invention relates to vehicles of the type for the accommodation of passengers and furnished with facilities for overnight travel, whereby the passengers may be provided with private sleeping rooms. The invention relates particularly to sleeping vehicles having permanently independent rooms disposed at upper and lower levels.

The primary object of the invention is the provision of a vehicle having permanently independent rooms convertible from sitting to sleeping rooms disposed at upper and lower levels, with the upper level rooms alternating with lower level rooms and having separate entrances to each.

An important object of the invention lies in the provision of a vehicle having permanently independent rooms at upper and lower levels with the upper level rooms having upper portions in adjoining relation and intermediate depending lower portions alternating with lower level rooms having upper portions disposed between the lower portions of the upper rooms.

One of the principal objects of the invention is the provision of a vehicle having permanently independent rooms alternating at upper and lower levels with separate entrances to each and wherein the lower rooms are each provided with a single sleeping accommodation and the upper rooms are each provided with a plurality of sleeping accommodations.

Another object of the invention is the provision of a vehicle having permanently independent rooms alternating at upper and lower levels, the upper rooms having their upper portions in adjoining relation and the lower rooms having the upper portions of each disposed beneath the upper portion of an adjoining upper room at one side of the lower room and the lower portion of the lower room disposed beneath the upper portion of an adjoining upper room at the other side of the lower room.

A further object of the invention is the provision of a vehicle having permanently independent rooms at upper and lower levels with each room having an individual entrance, separate and entirely independent of all others and wherein the upper rooms adjoin one with the other above the lower rooms, with adjoining rooms separated by a common wall for a portion of their vertical extent and the lower rooms being separated by stairways leading to the upper room entrances.

A still further object of the invention is the provision of a vehicle having permanently independent rooms alternating at upper and lower levels with individual entrances and stairways to the respective upper rooms separating the lower rooms and wherein the space beneath the upper rooms behind the stairways is utilized as a part of and to increase the area of the lower rooms and made readily accessible thereto.

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The foregoing and other and more detailed objects of the invention are had by the construction and arrangement illustrated in the accompanying drawings in which—

Fig. 1 is a general plan view of a portion of a railway car constructed to provide room arrangements of the type contemplated by this invention and illustrating the plan of the various lower level rooms together with double bedrooms of another type at the end of the car;

Fig. 2 is a similar view of a complemental portion of the car, but illustrating a general plan view of the upper level rooms, together with bedrooms of the same type as at the opposite end of the car;

Fig. 3 is a vertical longitudinal sectional view through a railway car of the type and room arrangement as shown in Figs. 1 and 2 and illustrating diagrammatically the disposition and relation of the rooms at upper and lower levels and showing the general outline of the upper rooms in relation to the formation of the lower rooms with the upper portion of the lower room disposed beneath an upper portion of one upper room and between the adjoining upper rooms and with the lower portion of the lower room disposed beneath the upper portion of the adjoining upper room;

Fig. 4 is a general perspective view of a portion of the car with parts broken away to reveal the arrangement of the rooms in alternate upper and lower relation with certain of the rooms made up for night use and others made ready for daytime occupancy and showing the individual stairways and entrances to the respective upper rooms separating the lower rooms which are provided with their own individual entrances. The plurality of sleeping accommodations in the upper rooms and the single accommodations in the lower rooms are clearly shown in this figure;

Fig. 5 is a vertical longitudinal sectional view taken from inside the rooms looking toward the aisle partition illustrating two upper level rooms and two lower level rooms and clearly showing the interfitting relation of the lower rooms with the upper rooms. An upper and a lower room are shown ready for daytime occupancy and the

remaining rooms are shown made up for night use with the convertible sofas disposed to provide beds. The extra berth for each upper room is shown disposed over the ceiling of the lower room;

Fig. 6 is a view similar to Fig. 5 but looking in the direction of the side wall of the car and showing the arrangement of the windows and the relation of the convertible sofas to the windows and the various facilities of the rooms. Toilet facilities in the form of enclosed hopper, folding washbasin and medicine cabinet for each room are illustrated. The area beneath the floor of the upper room utilized to supplement that of the lower room is revealed most clearly in this view and the formation of the partition wall dividing upper and lower rooms in the zone of the sofas in a sweeping curve affording ample headroom for seated persons arising from the lower room sofa is also clearly shown;

Fig. 7 is a cross sectional view through the lower room looking in the direction of the convertible sofa showing the disposition of the sofa beneath the curved portion of the dividing partition and illustrating the means for ventilating the room, including a conditioned air supply duct and inlet opening and the exhaust arrangement for withdrawing vitiated air from both the lower and adjoining upper rooms. This view also illustrates the arrangement of the rooms to one side of the side aisle;

Fig. 8 is also a cross sectional view through the lower room, but looking in the opposite direction, illustrating the separating partition between upper and lower rooms at the highest part of the lower room and showing the ready accessibility of the space beneath the upper room floor for the storage of luggage or the like and containing a convenient shelf. The view also shows the location of the combination toilet member at the side wall position opposite the entrance door;

Fig. 9 is a cross sectional view through an upper level room looking toward the convertible sofa illustrating the recessed aisle partition at the entrance stairway and behind which the sofa extends and showing the relative difference in height between the floors of upper and lower rooms with the steps providing communication therebetween. A baggage rack is shown upon the dividing partition above the sofa; and

Fig. 10 is a cross sectional view through the upper level room looking in the opposite direction from Fig. 9 and showing the additional berth for the upper room, above the lower room ceiling, together with the combination toilet member at the side wall position opposite the entrance door and including supply piping and discharge in the space beneath the floor.

Cars of the type to which this invention relates are known as duplex cars and the accommodations are known as duplex bedrooms. Cars of this type heretofore constructed and used have been arranged with single occupancy upper and lower rooms disposed in pairs of one type of rooms between pairs of the other type of rooms, i.e.: with adjoining upper rooms disposed between pairs of lower rooms which are arranged in pairs of adjoining rooms disposed between pairs of upper rooms. The pairs of upper rooms were each provided with a common entrance stairway leading to adjoining doorways and from which either of the rooms could be entered and the lower rooms of each pair were provided with entrances arranged side by side. In the duplex car of this invention, each room is provided with its own individual entrance independently of all others and the rooms are disposed in alternate relation at upper and lower levels with the individual stairways to the upper rooms separating the lower rooms. By alternating the rooms at upper and lower levels the upper rooms may be arranged each to accommodate two occupants wherefore with single occupancy lower rooms the passenger carrying capacity for this type of accommodation is increased by approximately fifty per cent. In addition to obtaining a greater number of passenger accommodations in a car, the present arrangement affords more spacious rooms and enables the installation of more comfortable facilities in both rooms.

In the drawings 10 represents a railway car having an underframe 11 extending at normal height above the rails in the region 12 over the trucks but depressed in the area 13 between trucks and having the normal and depressed areas connected by sloping ramp portions 14, all as best shown in Fig. 3. Side walls 15 and 16 connected by end walls 17 and roof structure 18, complete the enclosure. An aisle partition 19 with the side wall 16 defines a longitudinally disposed aisle 20 extending between the dummy end 21, containing various locker facilities 22 for the car, and the vestibule end 23, through which access is had to the car. A general toilet 24 is provided adjacent the vestibule end of the car. Between the aisle wall 19 and side wall 15 a series of rooms 25 and 26 are disposed at upper and lower levels respectively in the region of the depressed area 13 between the car trucks and more fully hereinafter to be described. In the areas 12 over the trucks, rooms 27, 28, 29, 30 and 31 are provided, each containing a convertible sofa 32 and an upper berth 33 and enclosed combination toilet facilities 34. Rooms 28 and 29 and rooms 30 and 31 may be used ensuite by means of folding partitions 35 separating the respective pairs of rooms. All of these rooms have their floors on a level with the floor of the aisle 20 in the region over the car trucks at normal height above the rails.

Referring now to the rooms 25 and 26, with which this invention is primarily concerned, it will be noted, as best revealed in Figs. 3, 5 and 6, that these rooms are disposed alternately at upper and lower levels with the floor level of the various lower rooms coincident with the level of the floor in the aisle 20 in the depressed area 13 of the car. As best shown in Fig. 6, the lower rooms 26 are each provided with an upright portion comprising the standing space in the room and a lower portion comprising the sitting or reclining area. A vertical partition 36 comprises a separating wall between the standing area of the lower room and the standing area of an adjoining upper room and a horizontal wall 37 forming a ceiling over the standing space separates the lower room from this same upper room. At the other side of the lower room and over the sitting area a partition 38 divides the lower room from an adjoining upper room at this side. This partition is offset as at 39 to provide a support for the upper room floor 40 and to afford room for operation of the convertible sofa in the lower room. From the offset 39 the partition 38 extends upwardly to a horizontal stepped portion 41 to provide a seat support for the upper room and this stepped portion is offset vertically as at 42 to provide additional headroom over the seat of the lower room. From the ceiling 37 to the portion 42 the partition 38 sweeps in a broad

receding curve, as at 43, affording the greatest amount of space in the lower room adjacent the juncture thereof with the portion 42. Partition 44, extending upwardly from the ceiling 37 to the car roof 18 provides a common wall lying between the two upper rooms adjoining the lower room at respective sides.

From the partition arrangement described it will be seen that the outline of the lower room in vertical longitudinal section is shaped to complement the vertical sectional outline of the upper room longitudinally of the car. The horizontal top portion of each upper room, is defined at one side by the partition 44 and ceiling 37 and at the other side by the next adjacent partition 44, together with curved partition 43 and including offset portions 42 and 41 while the upright middle or standing portion is defined by vertical partitions 36 and 38, extending respectively from the ceiling 37 and from the seat support 41 to the car floor 13, thereby including the stairway 45 leading from the floor 13 to the floor 40 of the upper room. The stairways thus separate every lower room from the next lower room but the upper rooms each adjoin with the upper rooms at opposite sides thereof through the medium of walls 44.

The seating facilities for the upper and lower rooms are disposed over-and-under with the seats in the respective rooms occupying substantially the same vertical plane but facing in opposite directions with the lower room seats all facing in the same direction and the upper room seats all facing in the other direction. A seat 46 for the upper room is disposed upon the seat support 41 and is in the form of a sofa extending substantially full width of the room and is associated with a convertible backrest 47 which is adapted to provide a transversely extending bed as will presently appear. The lower room is provided with a transversely disposed seat 48 extending substantially full width of the room and associated with a backrest 49 convertible to form a bed. The seats are disposed respectively above and below the portions 41, 42 and 43 of the dividing partition to one side of doors 50 and 51 leading from the aisle 20 through the partition 19 into the upper and lower rooms respectively and since the rooms alternate at the two levels and the seats being disposed to face in opposite directions in over-and-under relation, it will be seen that the seats at opposite sides of each dividing partition are disposed between the next adjacent doors 50 and 51. In the upper room the convertible sofa seat is disposed in the upper portion to one side of the middle standing portion while the convertible sofa in the lower room is disposed in the lower portion to one side of the standing area.

The convertible sofas in the upper and lower rooms are similar in the provision of transversely disposed seating accommodations having backrests convertible to full length beds by merely turning them from their normally inclined upright position to an inverted horizontal position, but the means for pivotally mounting the backrests differ substantially, since the operation of the backrest in the upper room must be closely coordinated with the curved partition 43, whereas sufficient room is had in the lower room for direct operation of the backrest. The backrest 49 in the lower room has a single pivot arrangement comprising a pivot 52 at each side supported in the respective seat ends 53 and about which the backrest rotates in a single movement from

the normally upright daytime position to the horizontal bed position for night use. In the day position the backrest is retained by latch mechanism 54 and when disposed in the bed position is supported upon brackets 55 secured in the seat ends. The backrest is upholstered and contoured to afford the utmost comfort to seated occupants and is constructed to provide an open box-like receptacle 56 adapted to support a mattress 57 and bedding. A shield 58 is hingedly mounted upon the lowermost inner face of the mattress receptacle in position to bridge the space between and bear against the partition 38 under pressure of springs (not shown) to prevent the bedding from falling between the bed and the partition. During initial operation of the backrest, the shield 58 rides upon an arcuate guide plate 59, secured to the partition 38, and together with the shield serving to close the space between the partition and backrest in the normally upright position thereof. The partition 38 is offset at 38 beneath the floor 40 of the upper room to provide sufficient clearance during operation of the backrest for that portion thereof disposed below the pivot point 52, as is best illustrated in Figs. 5 and 6.

It is necessary that the sofa backrest 47 in the upper room be arranged for a double movement in the operation thereof from sitting to sleeping positions in order to be accommodated within the receding curve of the partition 43 providing for the increased headroom and clearance for persons arising from the seat 48 in the lower room. This double movement is had through the provision of a plurality of sliding pivotal connections for the support of the backrest in the seat ends 60 and which serve to fix the orbit through which the backrest functions in direct relation to the curve of the partition 43. The backrest is equipped with a pair of fixed trunnions 61 and 62 disposed in spaced relation at each end thereof and adapted to cooperate with and be mounted in complemental track members 63 and 64 respectively, which are rigidly supported in the seat ends. The supporting guide bracket 63 is curved substantially to the same curvature as the partition 43 and the track portion thereof is of such length as to accommodate the full travel of trunnion 61 as the backrest is operated between extreme positions, while the supporting bracket 64 is disposed substantially horizontally and the track portion thereof is of a length to permit the bodily shifting laterally of the backrest in a direction away from the partition 43, as required by the receding curvature thereof, as the backrest is operated to the horizontal inverted bed forming position.

During the operation of the backrest 47 from the upright seat position to the horizontal bed forming position, it rotates somewhat more than ninety degrees and the initial movement occurs about the position of the trunnions 61 supported in the lowermost extremity of the track members 63, which represents a point located closely adjacent to the lowermost side of the backrest and substantially on a vertical line with the point of radius of the partition 43 where it merges with the horizontal portion 42, but of shorter radius in respect to the movement of the lower side of the backrest about the trunnions 61, than the radius of the lowermost curvature of the partition whereby this part of the backrest is adapted to clear the partition during operational movements. As the backrest is rotated about the trunnions 61 the trunnions 62 move laterally in the supporting tracks 64 from that end thereof closest to the par-

tition 43 to the end farthest removed from the partition. As the trunnions 62 approach the outermost ends of the supporting tracks away from the partition, the backrest pivots about these members as a fulcrum while the trunnions 61 ride up the tracks 63 to the upper ends thereof in the horizontal position of the bed. As the trunnions 61 traverse the tracks 63 from the lowermost point therein to the upper position, the trunnions 62 return to a position adjacent the inner end of the respective tracks 64, drawn by the action of trunnions 61 following the curvature of tracks 63 paralleling the partition 43. The return movement of the backrest 47 is just reverse to the opening operation. As the outer side of the backrest is lifted in returning it to normal position, the trunnions 61 travel to the lower end of the respective tracks 63, while at the same time the trunnions 62 move to the outer ends of supporting tracks 64. The trunnions 62 then return to the inner ends of tracks 64, as the backrest is moved to its final upright position, latching with the locking mechanism 65.

An important feature of the operating arrangement for the backrest 47 lies in the disposition of the supporting track 64 horizontally. The primary purpose of this arrangement is to maintain the proper height of the bed surface when the backrest is inverted, but in addition to this, a lifting action is imparted to the backrest upon initial operation to raise the backrest sufficiently to insure clearance thereof with respect to the partition 43 at the lowermost position of curvature where it merges with the horizontal portion 42. It will be seen that with the backrest in the normally upright seat position, outward movement of the trunnions 62 in the tracks 64 will raise the backrest clear of the partition during the initial operation and the final movement in the closing operation will be to lower the backrest again as the trunnions move from the outer to the inner ends of tracks 64. The trunnions 61 are inserted in the tracks 63 through the medium of removable sections while the trunnions 62 are inserted in tracks 64 through openings in the upper sides of the respective tracks.

The backrest 47, like that in the lower room, is constructed to provide an open box-like receptacle 66 for a mattress 67 and bedding and is provided with a bedding shield 68, hingedly mounted upon the receptacle and bearing against the partition 43 to bridge the space therebetween and prevent the bedding from falling in this space. When in the horizontal inverted position, the backrest is supported at the inner side by means of the trunnions 62 in the brackets 64 and at the outer side by means of brackets 69 mounted in the seat ends 60 and with which the backrest engages as it is opened to the bed position. In the normal position the backrest affords a comfortably contoured support disposed at an easy angle and further to insure the utmost comfort for occupants of the sofa and to prevent any hard spots of which the occupants might be conscious, the offset 42 in partition 43, which it might be said is located between the seat cushion 46 and backrest 47, is padded and upholstered, as at 70, throughout the full length of the sofa.

Each of the upper and lower rooms 25 and 26 is provided with toilet facilities in the form of an enclosed hopper, folding washbasin and medicine cabinet, all combined in a single built-in structure 80. The enclosures 80 in adjoining upper and lower rooms are disposed upon opposite sides of partition 36 adjoining the side wall 15 and contain similar facilities including enclosed hopper 81, folding washbasin 82 and medicine cabinet 83, having a hinged swinging mirror door 84. The door 84 on the medicine cabinet in the lower room is provided with lighting fixtures 85 disposed above and below the mirror adapted to swing with the door and whereby to enable use of the mirror in any desired position of angularity. The medicine cabinet door in the upper room is not equipped with built in lighting fixtures, but a plurality of light fixtures 86 are mounted in the ceiling 18 in staggered relation and so located as to light the features of persons using the mirror 84 with the door disposed at varying angles. The hopper 81 in the lower room discharges directly through the floor 13 to the right of way, but the hopper in the upper room is provided with a discharge outlet pipe 87, extending from the hopper discharge opening through the space beneath the upper room floor 40 and through the car floor 13 to discharge upon the right of way. Soiled towel receptacles 88 are located upon the side wall 15 and the partition 36 in the upper and lower rooms respectively and convenient to the washbasins 82. Folding ashtrays 89 are mounted upon the side wall of the enclosure 80 for the convenience of persons sitting upon the respective sofas adjacent the side wall 15 and similar ashtrays are mounted in the aisle partition 19 for persons at that end of each sofa.

Electrical outlets 90 are provided in the upper and lower rooms for the convenience of persons using shavers, curlers or the like and are located adjacent to the mirrors 84. In the upper room the outlet is located upon the side wall of the enclosure 80 and in the lower room upon the side wall 15 by the side of the medicine cabinet. The outlet in the upper room is combined with a series of switches controlling the various electrical fixtures of the room while the outlet in the lower room is mounted independently of such control switches which are mounted upon the aisle partition 19. A luggage rack 91 is provided in the upper room, located upon the partition 44 above the sofa and containing lighting fixtures 92 for the general illumination of the room. The lower room contains lighting fixtures 93 in the ceiling 37 and both rooms are provided with night lights 94. A shoe box 95 in the lower room is located beneath the seat 48 at the aisle side as best shown in Fig. 7, and is accessible from the aisle 20 by the porter through the aisle partition 19, as well as from inside the room by the occupant. A similar shoe box 96 is provided for the upper room and is accessible through the aisle partition from inside the room, as best shown in Fig. 5, but access thereto from the aisle 20 is had in a manner differing from that for the box 95 in the lower room.

The entrance to the upper room is recessed from the aisle 20 as necessitated by the stairway 45 and the aisle partition 19 is provided with inwardly extending portions 98 and 99, as shown in Figs. 9 and 10, at opposite sides of the stairway and between which the door 50 is disposed. In order to provide head room for persons using the stairway entering and leaving the upper room, the aisle ceiling is sloped upwardly at the entrance way as at 97. As shown in Fig. 9, access to the shoe box 96 from the aisle 20 is had in the area of the offset in the aisle ceiling in that the door thereto is located in the side wall portion of the offset. Hand rails 100 and 101, as shown

in Figs. 4, 9 and 10 are secured upon the respective offset partitions 98 and 99 at opposite sides of the stairway 45 for the convenience and safety of persons entering or leaving the upper room. The rail 100 is disposed to the right of persons entering the upper room, while the rail 101 is to the right coming out and it will be noted that whereas the handrail 100 is disposed at an inwardly directed angle to persons ascending the stairs, the handrail 101 is disposed vertically. By this arrangement greater clearance is provided between the handrails at opposite sides of the entranceway, since the partition 99 is disposed at an angle providing a flaring passageway between the door 50 and the aisle partition 19 and with the rail 101 secured to the partition 99 at the widest portion of the passageway throughout the full height of the rail, it will readily be seen that greater space between the rails is provided than if the rail 101 were disposed at an angle corresponding to that of rail 100, thus bringing their upper portions more closely together.

It will be noted that the sofa 47 in the upper room is of greater length than the distance between the recessed entranceway and the side wall 15 and being of unitary construction, assembled before installation in the room, it becomes necessary to make provision for installing and removing it both at the original application and for maintenance purposes. The sofa, when inverted to the sleeping position, occupies substantially all of the space to that side of the entrance door 50 and is sloped away at the outside corner, as at 104, to fit within the confines of the space between the offset 99 and wall 44. In order to get a sofa of this size into the room, it is necessary to make the offset partition 99 a separate and removable unit which may be removed for installation or removal of the sofa and reapplied with the sofa in place. As shown in Fig. 9, the partition 99 is a separate unit from above the level of the upper room floor 40 to the ceiling of the car.

The area beneath the floor 49 of the upper room is utilized to provide additional space for the lower room. As best shown in Figs. 5, 6 and 8, the partition 36, facing the sofa 49, is provided with an opening in the region below the floor 49, affording access to space 102 beneath the upper room and which may be utilized for the accommodation of luggage or the like. The space 102, being open to the lower room is directly accessible therefrom and convenient to persons in the standing area of the room or seated upon the sofa. A shelf 103 extends across the upper portion of the storage space and provides a convenient surface for the reception of articles desired by the occupant of the room to be kept readily available. The shelf is provided primarily for the convenience of persons seated on the sofa and its height above the floor and location thereof substantially centrally of the partition 36 are proportioned accordingly so that for all practical purposes the shelf is equally convenient to persons seated at any position on the sofa.

The lower room is equipped with but the single convertible bed 49, but the upper room in addition to the convertible bed 47 is provided with a fixed bed located at the opposite side of the standing space in the upper portion of the room. The fixed bed is disposed over the ceiling 37 of the lower room and includes a resilient spring construction 105 including a rectangular frame 106 supported between the walls 36 and 44 and of substantially the same length as the convertible bed 47. A mattress 107 and suitable bedding complete the sleeping accommodations. It will be seen that the area above the ceiling 37 in which this bed is mounted balances the area at the other side in which the convertible bed is mounted with the standing space therebetween forming an upright standing portion and including the stairway 45. Thus single lower rooms are disposed between double upper rooms and separated by the stairways to the upper rooms. The supplemental sleeping accommodations in the upper rooms increase the possible passenger carrying capacity of that portion of the vehicle having upper and lower rooms by approximately fifty per cent, although the individual upper rooms may be sold as single accommodations if conditions warrant.

Both the upper and lower rooms are heated and supplied with conditioned air and adapted for recirculation and are provided with means for withdrawing vitiated air. In the upper room a radiator 110 disposed at the side wall 15 between the enclosure 80 and dividing partition 38 and concealed behind grille 111 furnishes the means for heating the air of the room and is supplied with steam from a vertical pipe 112 connecting the radiator with a supply line 113. In the lower room finned areas 114 in the heating pipe 113 in the area to the side of enclosure 80 and extending beneath the seat 48 furnish the necessary heat. Grille 115 conceals the heating means. The ventilating arrangement for the rooms includes a conditioned air supply duct 120 disposed over the aisle ceiling 119 and supported from the roof framing. The supply duct communicates with the individual rooms through branch ducts 121 and 122, leading to the upper and lower rooms and supplying fresh air thereto through outlets 123 and 124 respectively opening through the aisle partition 19 in the upper room and through the ceiling 37 in the lower room. To provide sufficient space inside the aisle partition 19 for the branch duct 122 to pass to the ceiling 37 the upper room in the area of the fixed bed 107 is provided with a wall 118 spaced from the aisle wall 19 sufficiently to permit passage of the duct and coextensive with the aisle wall area between the partition 44 and offset partition 98. At the opposite end of the fixed bed area a wall 117 spaced from the side wall 16 and coextensive with the entire area between the medicine cabinet 83 and wall 44 provides for the accommodation of an exhaust duct 116 communicating with an exhaust ventilator 125 on the roof of the vehicle for withdrawing vitiated air from both upper and lower rooms. The duct 116 is connected at its bottom end with the lower room through ceiling 37 to admit air through inlet opening 126 and is connected to the upper room through inlet opening 127 in the side wall 117. A baffle 128 is disposed in the duct 116 so as in effect to divide the duct into two separate branches leading from the openings 126 and 127 to the ventilator 125 for more effective withdrawal of vitiated air. Air for recirculation is drawn from the upper and lower rooms through louvered outlets 129 disposed in the respective entrance doors 50 and 51 into the aisle 20 which provides a path for the air leading back to the recirculated air inlet to the air conditioning installation (not shown) in the end zone of the vehicle.

It will be noted, as best shown in Figs. 3 and 6, that the window arrangement in the side wall 15

is such that each sofa in upper and lower rooms is disposed alongside of a window. The windows 130 are disposed in upper and lower staggered, partially overlapping relation and occupy the space in the side wall between the respective sofas 47 and 49 and the toilet enclosures 80.

From the foregoing it will be seen that there has been provided a vehicle having rooms at upper and lower levels with a side aisle having a level coinciding with the floor level of the lower rooms and wherein the lower rooms are all spaced apart by stairways to individual upper rooms. The longitudinal sectional contour of adjoining rooms is such that a lower room is disposed between adjoining upper rooms, each room being permanently independent of all others with separate entrances and convertible from sitting to sleeping rooms. The arrangement provides adjoining rooms alternating at upper and lower levels to one side of a longitudinal aisle with transversely disposed beds and having separate and independent entrances to each. The revenue earning capacity of the vehicle is increased not only by the provision of rooms at two levels, but further by the inclusion of additional sleeping facilities in certain of the rooms which enables these rooms to be sold either for single or double accommodations.

What is claimed is:

1. In a vehicle having a side wall and a longitudinal partition, a plurality of permanently independent rooms between said side wall and partition disposed alternately at upper and lower levels and convertible from sitting to sleeping rooms, a transversely arranged sofa extending substantially full length between said side wall and partition in the lower room convertible from an upright seating position to an inverted sleeping position forming a full length bed, means mounting the sofa for pivotal movement between upright and inverted positions, a partition dividing the lower room from an adjoining upper room having a receding curved portion affording headroom over said sofa, a transversely arranged sofa extending substantially full length between said side wall and partition in the upper room disposed adjacent to said partition and convertible from an upright seating position to an inverted sleeping position forming a full length bed, means mounting the sofa in the upper room for pivotal movement between upright and inverted positions, a longitudinally extending side aisle in the vehicle, and individual stairways from said aisle to the upper rooms disposed between the lower rooms.

2. In a vehicle having a side wall and a longitudinal partition, permanently independent rooms between said side wall and partition disposed at upper and lower levels and convertible from sitting to sleeping rooms, a transversely arranged sofa extending substantially full length between said side wall and partition in the lower room convertible from an upright seating position to an inverted sleeping position forming a full length bed, means mounting the sofa for pivotal movement between upright and inverted positions, a partition dividing the lower room from the adjoining upper room having a receding curved portion affording headroom over said sofa, a transversely arranged sofa extending substantially full length between said side wall and partition in the upper room disposed adjacent to said partition and convertible from an upright seating position to an inverted sleeping position forming a full length bed, and means mounting the sofa in the upper room for double pivotal action conforming the movement of the sofa to the curvature of said partition.

3. In a vehicle having a longitudinally extending aisle at one side thereof, a plurality of permanently independent rooms disposed alternately at upper and lower levels and adapted to provide daytime and night-time seating and sleeping accommodations respectively, said rooms including lower rooms each having a combination seating and sleeping area in the lower portion with an adjacent upper portion providing a standing area between the adjoining upper rooms, a transversely arranged sofa disposed in the lower portion of each of said lower rooms convertible to form a full length sleeping bed, an entrance to each room from said aisle opening to the standing space, a luggage storage space for each lower room disposed beneath the floor of the next adjoining upper room at the side opposite said sofa and accessible from the standing space, a utility shelf in the storage space accessible from said sofa, and toilet facilities for the lower rooms disposed in the standing space at the side opposite said entrance.

4. In a vehicle having a longitudinally extending aisle at one side thereof, a plurality of permanently independent rooms disposed alternately at upper and lower levels and adapted to provide daytime and night-time seating and sleeping accommodations respectively, said rooms including lower rooms each having a combination seating and sleeping area in the lower portion with an adjacent upper portion providing a standing area between the adjoining upper rooms, a transversely arranged sofa disposed in the lower portion of each of said lower rooms convertible to form a full length sleeping bed, an entrance to each room from said aisle opening to the standing space, and a luggage storage space for each lower room disposed beneath the floor of the next adjoining upper room at the side opposite said sofa and accessible from the standing space.

5. In a vehicle having a side wall and a longitudinal partition, permanently independent rooms between said side wall and partition disposed at upper and lower levels and convertible from sitting to sleeping rooms, a transversely arranged sofa extending substantially full length between said side wall and partition in the lower room, a partition dividing the lower room from the adjoining upper room having a receding curved portion affording headroom over said sofa, a transversely arranged sofa extending substantially full length between said side wall and partition in the upper room disposed adjacent to said partition and convertible from an upright seating position to an inverted sleeping position forming a full length bed, and means mounting the sofa in the upper room for pivotal action conforming the movement of the sofa to the curvature of said partition.

6. In a vehicle, a plurality of permanently independent rooms disposed alternately at upper and lower levels and convertible from sitting to sleeping rooms, said rooms at the upper level having seating and sleeping areas in their upper portions with depending lower portions providing standing areas between the seating and sleeping areas, said upper rooms being disposed in adjoining relation with a seating and sleeping area of respectively adjoining rooms disposed over each lower room, said lower rooms each having a combination seating and sleeping area in the lower portion with an adjacent upper portion

providing a standing area between the adjoining upper rooms, a longitudinally extending aisle at one side of the vehicle coincident with the level of said lower rooms, and stairways from said aisle to the upper rooms disposed between the lower rooms, all of said rooms being disposed to one side of said aisle.

7. In a vehicle, a plurality of permanently independent rooms disposed alternately at upper and lower levels and convertible from sitting to sleeping rooms, said rooms at the upper level having seating and sleeping areas in their upper portions with depending lower portions providing standing areas between the seating and sleeping areas, said upper rooms being disposed in adjoining relation with a seating and sleeping area of respectively adjoining rooms disposed over each lower room, said lower rooms each having a combination seating and sleeping area in the lower portion with an adjacent upper portion providing a standing area between the adjoining upper rooms, transversely disposed sofas providing seating accommodations in the respective rooms and convertible to provide full length sleeping beds, said sofas being located respectively in an upper portion of said upper room and in the lower portion of said lower room and extending substantially full width of the rooms, a longitudinally extending side aisle in the vehicle coincident with the level of said lower rooms, and individual stairways from said aisle to the upper rooms disposed between the lower rooms.

8. In a vehicle, a plurality of permanently independent rooms disposed alternately at upper and lower levels and convertible from sitting to sleeping rooms, said rooms at the upper level having seating and sleeping areas in their upper portions with depending lower portions providing standing areas between the seating and sleeping areas, said upper rooms being disposed in adjoining relation with a seating and sleeping area of respectively adjoining rooms disposed over each lower room, said lower rooms each having a combination seating and sleeping area in the lower portion with an adjacent upper portion providing a standing area between the adjoining upper rooms, a curved partition dividing adjoining upper and lower rooms, a transversely arranged sofa in the upper room disposed adjacent to said curved partition, a transversely arranged sofa in the lower room disposed beneath said curved partition, both of said sofas being convertible from upright seating positions to inverted sleeping positions forming full length beds and located respectively in an upper portion of said upper room and in the lower portion of said lower room and extending substantially full width of the rooms, means mounting the sofa in the lower room for pivotal movement between upright and inverted positions, means mounting the sofa in the upper room for pivotal movement between upright and inverted positions, a longitudinally extending side aisle in the vehicle coincident with the level of the lower rooms, and individual stairways from said aisle to the upper rooms disposed between the lower rooms.

9. In a vehicle, a plurality of permanently independent rooms disposed alternately at upper and lower levels and convertible from sitting to sleeping rooms, said rooms at the upper level having seating and sleeping areas in their upper portions with depending lower portions providing standing areas between the seating and sleeping areas, said upper rooms being disposed in adjoining relation with a seating and sleeping area of respectively adjoining rooms disposed over each lower room, said lower rooms each having a combination seating and sleeping area in the lower portion with an adjacent upper portion providing a standing area between the adjoining upper rooms, a transversely arranged sofa disposed in the lower portion of said lower room providing seating accommodations in the lower room and convertible to provide a full length sleeping bed extending substantially full width of the room, a transversely arranged sofa disposed in an upper portion of said upper room over one lower room and providing seating accommodations in the upper room convertible to provide a full length sleeping bed extending substantially full width of the room, a transversely arranged full length bed in the upper room disposed in an upper portion of said upper room over another lower room, a longitudinally extending aisle at one side of the vehicle disposed to one side of all of the rooms, and individual stairways from said aisle to the respective upper rooms disposed between the lower rooms.

10. In a vehicle, a plurality of permanently independent rooms disposed alternately at upper and lower levels and convertible from sitting to sleeping rooms, said rooms at the upper level having seating and sleeping areas in their upper portions with depending lower portions providing standing areas between the seating and sleeping areas, said upper rooms being disposed in adjoining relation with a seating and sleeping area of respectively adjoining rooms disposed over each lower room, said lower rooms each having a combination seating and sleeping area in the lower portion with an adjacent upper portion providing a standing area between the adjoining upper rooms, a transversely arranged sofa disposed in the lower portion of said lower room providing seating accommodations in the lower room and convertible to provide a full length sleeping bed extending substantially full width of the room, a partition dividing the lower room from an adjoining upper room having a receding curved portion affording head room over said sofa, a transversely arranged sofa in the upper room adjacent to said partition in an upper portion of said upper room over one lower room and providing seating accommodations convertible to provide a full length sleeping bed extending substantially full width of the room, means mounting the sofa in the upper room for pivotal movement between upright and inverted positions, a transversely arranged full length bed in the upper room disposed in an upper portion of said upper room over another lower room, a wall separating the upper room from this last named lower room, a longitudinally extending aisle at one side of the vehicle disposed to one side of all of the rooms, and individual stairways from said aisle to the respective upper rooms disposed between the lower rooms.

11. In a vehicle, a plurality of permanently independent rooms disposed alternately at upper and lower levels and convertible from sitting to sleeping rooms, said rooms at the upper level having seating and sleeping areas in their upper portions and depending lower portions providing standing areas between the seating and sleeping areas, said upper rooms being disposed in adjoining relation with a seating and sleeping area of respectively adjoining rooms disposed over a lower room, a longitudinally extending aisle at one side of the vehicle disposed to one side of all of the

rooms, separate entrances to the individual rooms from said aisle, and stairways in the respective entrances to said upper rooms disposed between the lower rooms.

12. In a vehicle having a longitudinally extending aisle at one side thereof, a plurality of permanently independent rooms disposed alternately at upper and lower levels and adapted to provide daytime and nighttime seating and sleeping accommodations respectively, said rooms at the upper level having seating and sleeping areas in their upper portions and depending lower portions providing standing areas between the seating and sleeping areas, said upper rooms being disposed in adjoining relation with a seating and sleeping area of respectively adjoining rooms disposed over a lower room, a transversely arranged seat in each room disposed in an upper portion thereof, a transversely arranged full length bed disposed in an upper portion of each of said rooms, an entrance to each room including a stairway from said aisle opening to the standing space, and toilet facilities in the standing space opposite said entrance.

13. In a vehicle having a longitudinally extending aisle at one side thereof, a plurality of permanently independent rooms disposed alternately at upper and lower levels and adapted to provide daytime and nighttime seating and sleeping accommodations, respectively, said rooms at the upper level having seating and sleeping areas in their upper portions and depending lower portions providing standing areas between the seating and sleeping areas, said upper rooms being disposed in adjoining relation with a seating and sleeping area of respectively adjoining rooms disposed over a lower room, a transversely arranged seat in each upper room, a transversely arranged full length bed in each upper room, a transversely arranged sofa in the lower room convertible to form a full length sleeping bed, and an entrance to each room opening to the respective standing spaces from said aisle, a stairway in the respective entrances to the upper rooms, the arrangement of said rooms being such that each lower room is overlapped by two adjoining upper rooms with the seat in one of the upper rooms overlying the sofa in the lower room and the bed in the other upper room overlying the standing space in the lower room, said standing spaces in adjoining upper and lower rooms being disposed side by side upon opposite sides of a separating wall.

14. In a vehicle having a longitudinally extending aisle at one side, a plurality of permanently independent rooms disposed at upper and lower levels and adapted to provide daytime and nighttime seating and sleeping accommodations respectively, said rooms at the upper level having seating and sleeping areas in their upper portions and depending lower portions providing standing areas between the seating and sleeping areas, said upper rooms being disposed in adjoining relation with a seating and sleeping area of respectively adjoining rooms disposed over a lower room, a seat in each of said upper rooms disposed in said seating area, a full length bed in each upper room disposed in said sleeping area, an entrance to each room from said aisle, and toilet facilities in each of said rooms accessible from the standing space.

15. In a vehicle, a plurality of permanently independent rooms disposed at upper and lower levels and convertible from sitting to sleeping rooms, said rooms at the upper level having seating and sleeping areas in their upper portions and depending lower portions providing standing areas between the seating and sleeping areas, said upper rooms being disposed in adjoining relation with a seating and sleeping area of respectively adjoining rooms disposed over a lower room, said lower rooms each having a combination seating and sleeping area in the lower portion with an adjacent upper portion providing a standing area between the adjoining upper rooms, a longitudinally extending aisle at one side of the vehicle disposed to one side of all of the rooms, and separate entrances from said aisle individual to the respective rooms.

16. In a vehicle, a plurality of permanently independent rooms disposed at upper and lower levels and convertible from sitting to sleeping rooms, said rooms at the upper level having seating and sleeping areas in their upper portions and depending lower portions providing standing areas between the seating and sleeping areas, said upper rooms being disposed in adjoining relation with a seating and sleeping area of respectively adjoining rooms disposed over a lower room, and said lower rooms each having a combination seating and sleeping area in the lower portion with an adjacent upper portion providing a standing area between the adjoining upper rooms, said vehicle having a longitudinal aisle at one side communicating with all of said rooms.

17. In a vehicle, a plurality of permanently independent rooms arranged alternately at upper and lower levels and convertible from sitting to sleeping rooms, said upper rooms each having upper level areas and a depending lower portion providing standing space between said areas with said areas of respectively adjoining rooms disposed in contiguous relation over a lower room, said upper rooms each having a combination seating and sleeping accommodation in one of said areas, said lower rooms each having a combination seating and sleeping accommodation in a lower area and an adjacent upper portion providing standing space at one side of said area, said lower room standing space being disposed between an upper room standing space and one of said areas in the adjoining upper room, and a longitudinally extending aisle at one side of the vehicle communicating with all of said rooms.

18. In a vehicle, a plurality of permanently independent rooms arranged alternately at upper and lower levels and convertible from sitting to sleeping rooms, said upper rooms each having upper level areas and a depending lower portion providing standing space between said areas with said areas of respectively adjoining rooms disposed in contiguous relation over a lower room, said upper rooms each having a combination seating and sleeping accommodation in one of said areas, said lower rooms each having a combination seating and sleeping accommodation in a lower area and an adjacent upper portion providing standing space at one side of said area, said lower room standing space being disposed beneath one of said areas in an upper room and between the standing space in that upper room and one of said areas in the adjoining upper room, a longitudinally extending aisle at one side of the vehicle coincident with the level of said lower rooms communicating with all of the rooms, and stairways from said aisle to the upper rooms.

19. In a vehicle, a plurality of permanently independent rooms arranged alternately at upper and lower levels and convertible from sitting to sleeping rooms, said upper rooms each having upper level areas and a depending lower portion providing standing space between said areas with

said areas of respectively adjoining rooms disposed in contiguous relation over a lower room, said lower rooms each having a lower area and an adjacent upper portion providing standing space at one side of said area and disposed between an upper room standing space and one of said areas in the adjoining upper room, transversely disposed sofas providing seating accommodations in the respective rooms and convertible to provide full length sleeping beds, said sofas being located respectively in one of said areas in each upper room and in said lower area in each lower room and extending substantially full width of the rooms, and a longitudinally extending aisle at one side of the vehicle communicating with all of said rooms.

20. In a vehicle, a plurality of permanently independent rooms arranged alternately at upper and lower levels and convertible from sitting to sleeping rooms, said upper rooms each having upper level areas and a depending lower portion providing standing space between said areas with said areas of respectively adjoining rooms disposed in contiguous relation over a lower room,

said lower rooms each having a lower area and an adjacent upper portion providing standing space at one side of said area and disposed between the adjoining upper rooms, transversely disposed seating accommodations in the respective rooms located in one of said areas in each upper room and in said lower area in each lower room, and a longitudinally extending aisle at one side of the vehicle communicating with said rooms, all of said rooms being disposed to one side of said aisle.

BASIL E. JONES.

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