

May 5, 1959

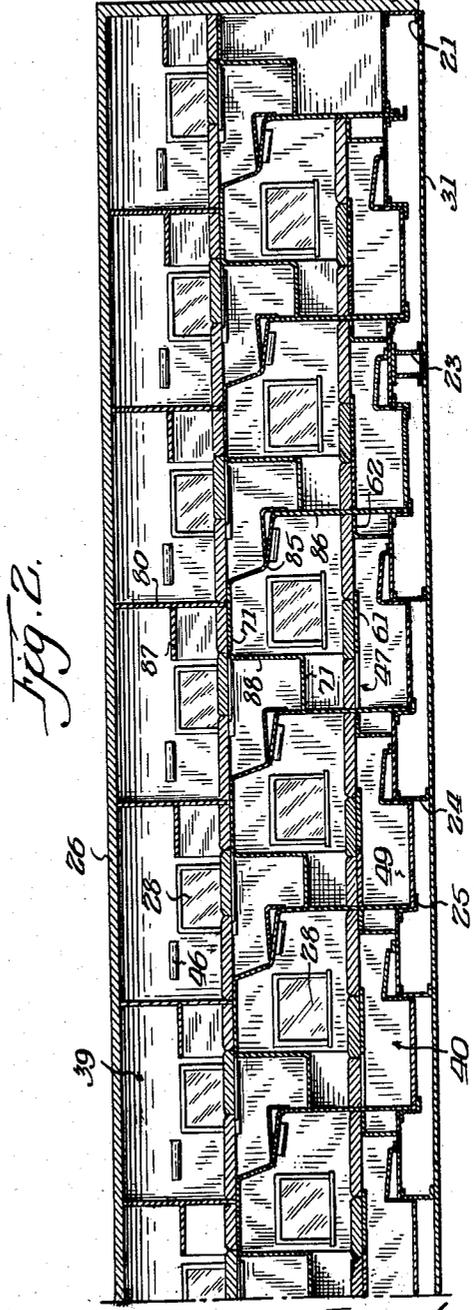
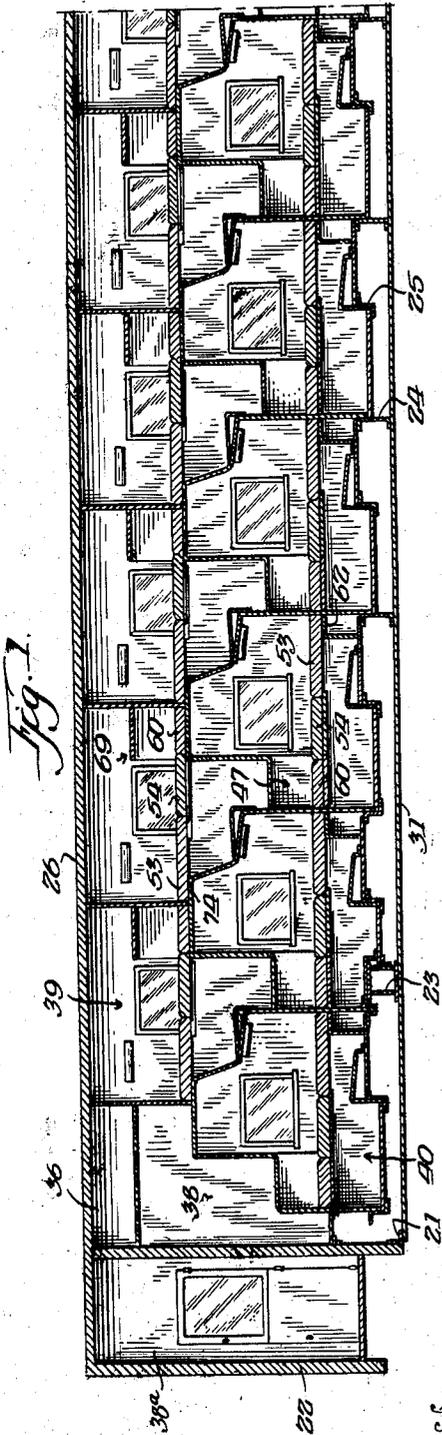
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2,884,873

DUPLEX COACH

Filed July 23, 1954

7 Sheets-Sheet 1



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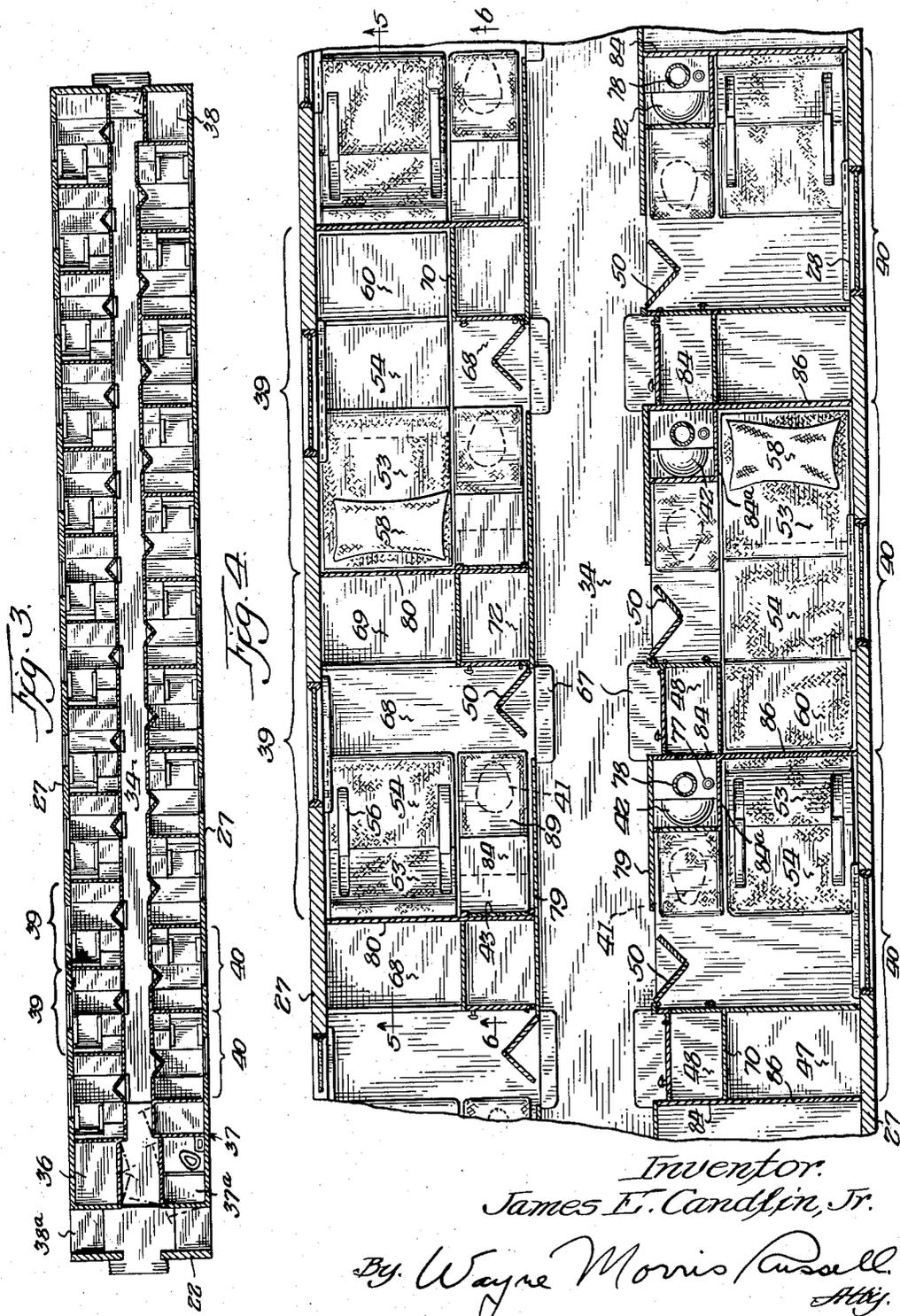
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DUPLEX COACH

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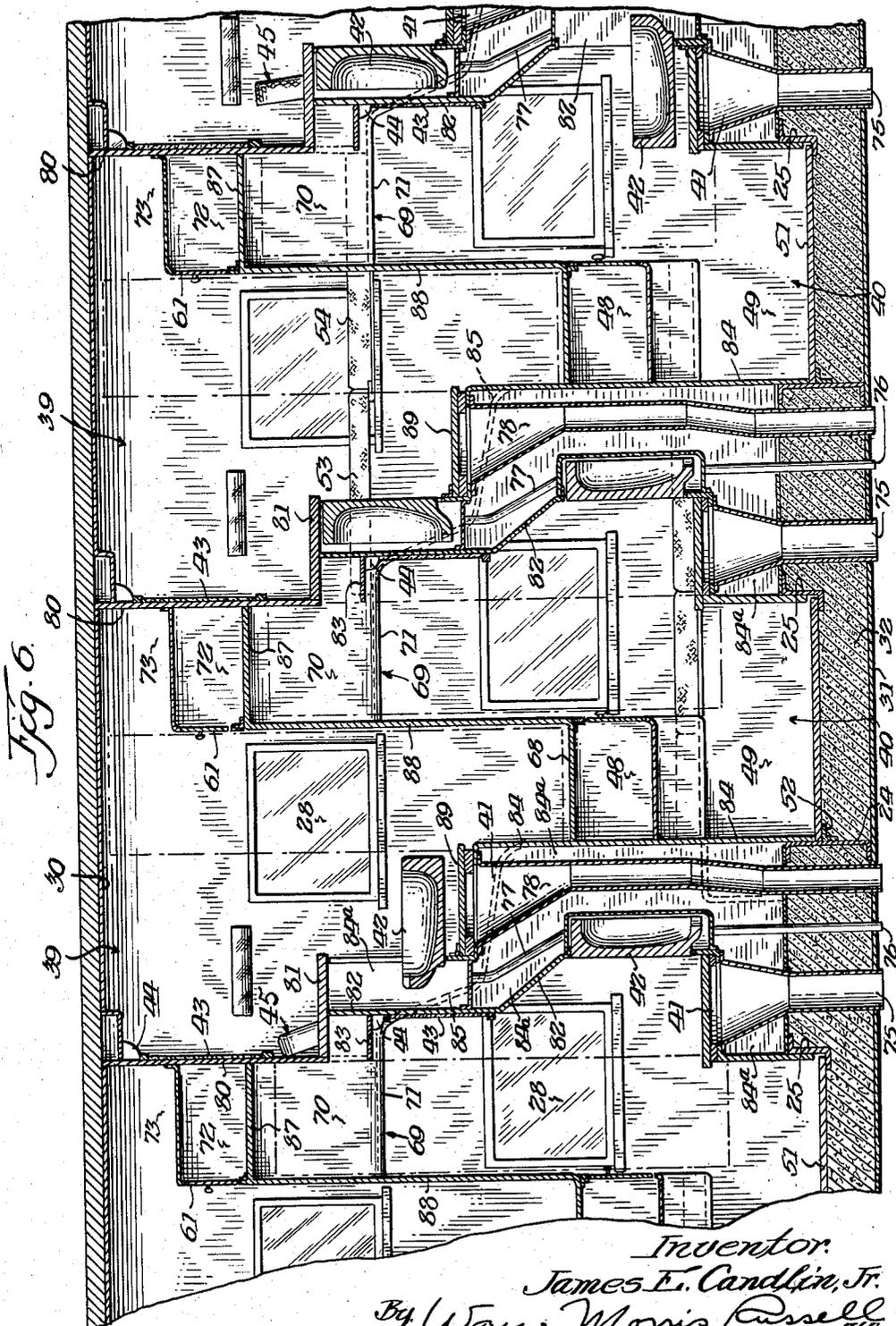
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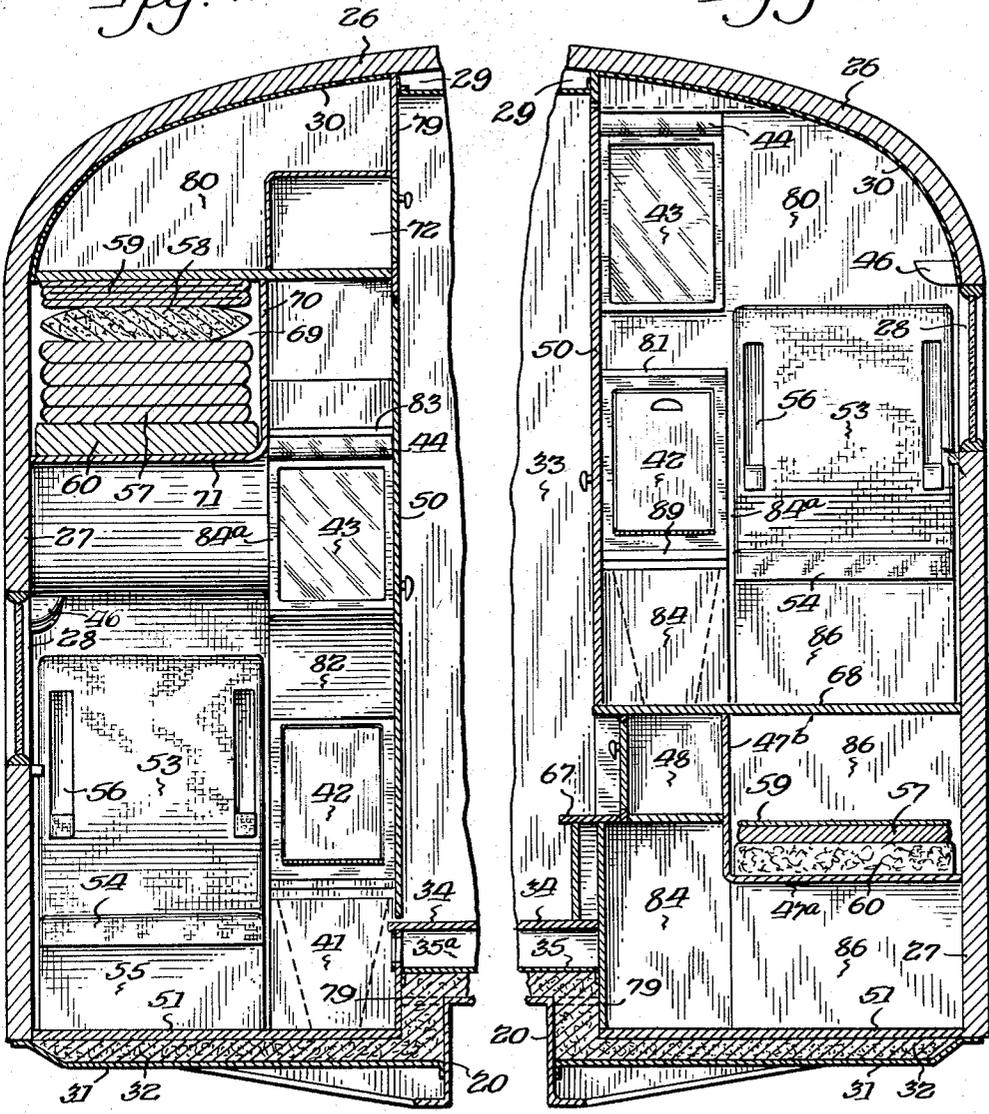
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Fig. 7.

Fig. 8.



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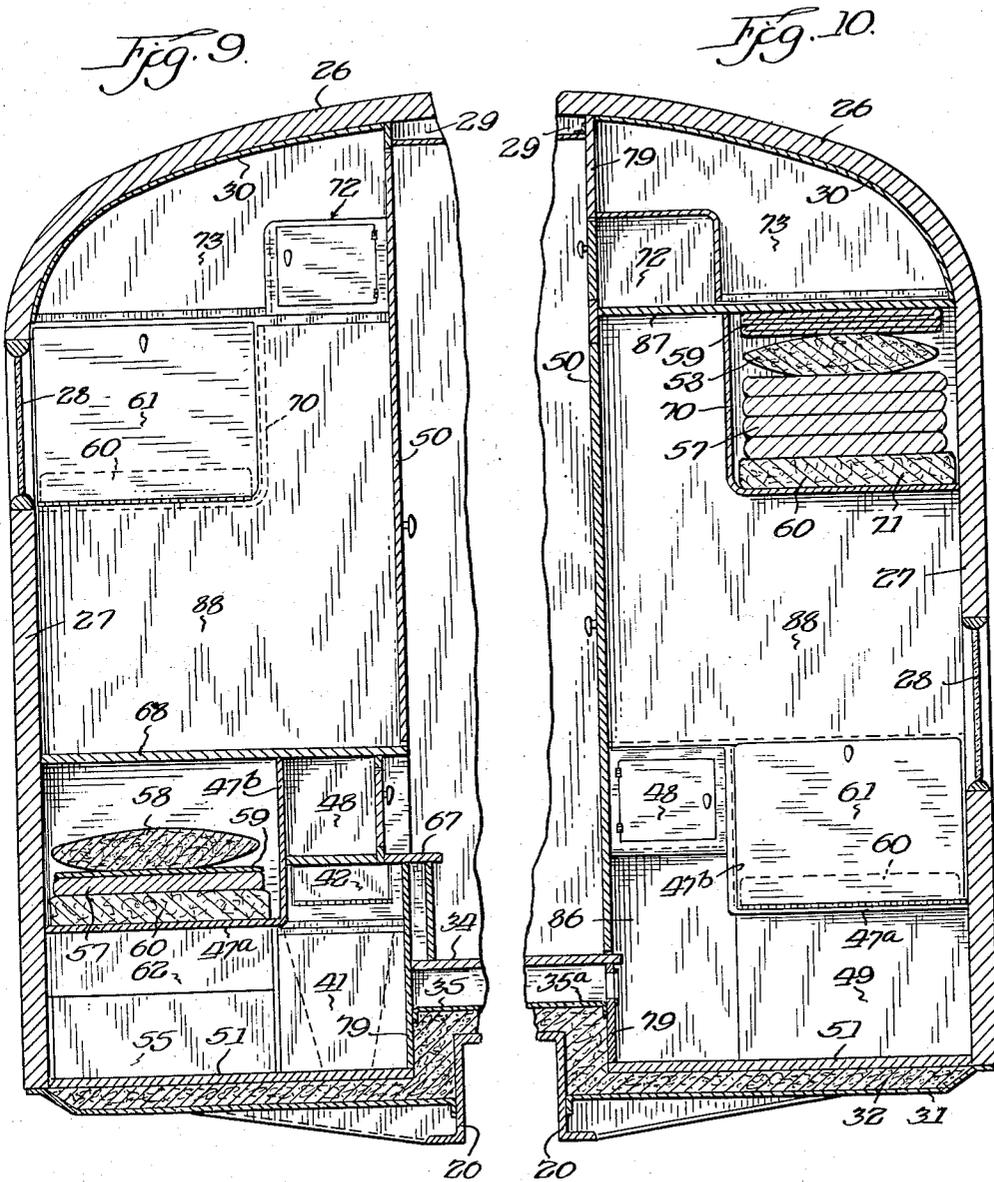
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DUPLEX COACH

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7 Sheets-Sheet 6



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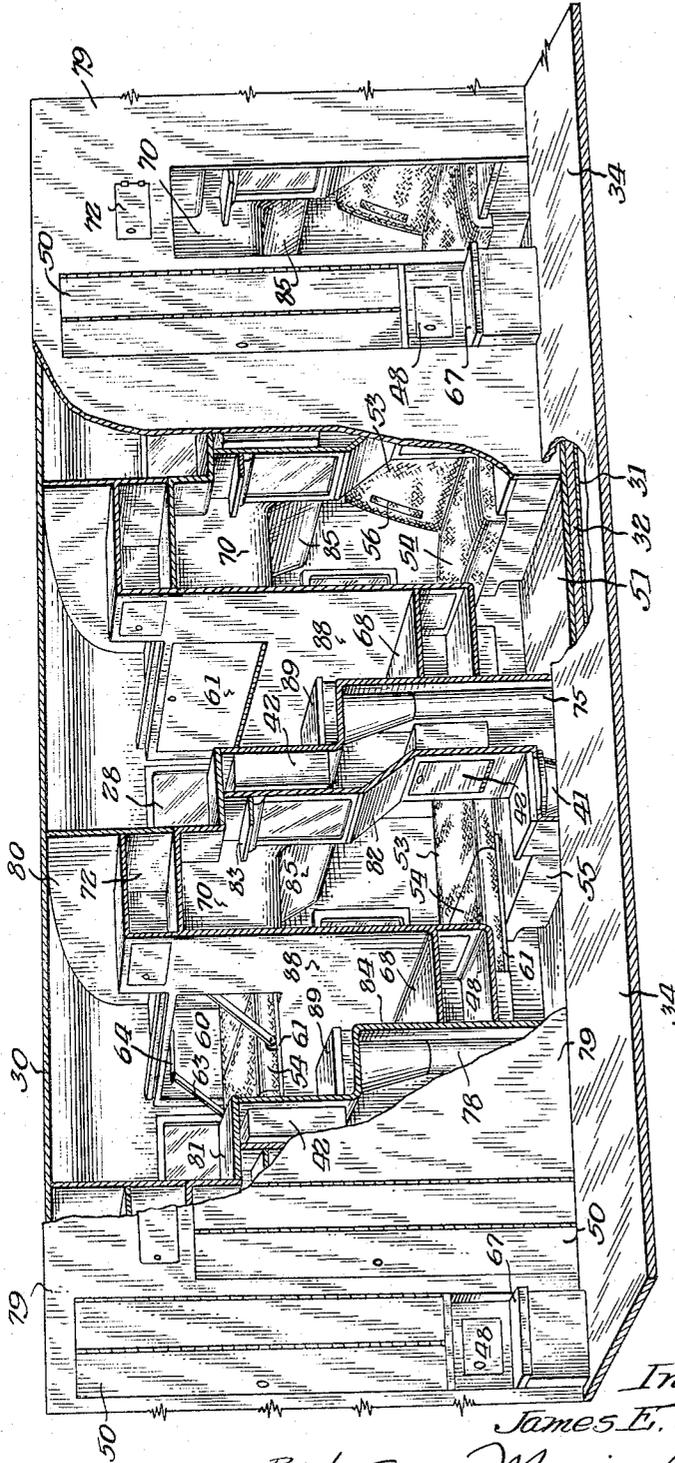
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DUPLEX COACH

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FIG. 11.



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2,884,873

DUPLEX COACH

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3 Claims. (Cl. 105—315)

This invention relates to a railway passenger car and more particularly to a standard sized duplex-type coach having individual passenger rooms convertible into sleeping rooms.

The present day duplex sleeping coach has two purposes, first to provide individual seating and sleeping rooms containing all available facilities, such as toilet, lavatory, and luggage space, for the comfort and convenience of the passengers, and second, to provide a sufficient number of such rooms in a standard sized railway car to enable low passenger fares.

Thus, the invention embodied herein concerns itself with providing and maintaining for day and night use all the aforementioned conveniences while increasing the individual room capacity to a hitherto unattainable number of 47 passenger rooms, in addition to the usual and necessary electric lockers, general toilet, and linen storage facilities, in a passenger car of standard height and standard length.

This number of individual rooms is obtained by a novel combination of features wherein a passenger car having a center passageway has individual rooms on each side thereof extending well over the trucks area, the rooms on each side being alternately placed on a lower level and an upper level, or duplex style, wherein the floor of the lower room is depressed below the general or usual room floor level and wherein the floor of the upper room acts as a bedding locker and shoe locker ceiling for the lower room. The longitudinally aligned seats of the upper rooms all face the same direction as do the longitudinally aligned seats of the lowers, but the directions are opposite. The seats are directly over each other but facing the opposite direction, enabling the floor of the upper to be as aforementioned, giving sufficient standing height in the upper. Due to an ingenious bed arrangement the upper rooms are each of a length not more than that of an average sized bed retaining the lower room standing height sufficient to allow a man of average height to walk from the passageway to the outer side wall. This novel feature is of extreme importance in that in present duplex cars of this type, upper rooms are moved apart in order to accommodate sufficient standing height in the lower rooms, thus losing valuable longitudinal space in the upper portions of the duplex car, a disadvantage herein rectified by the improved bed arrangement. The particular design of the bedding arrangement also eliminates extra longitudinal room space therefor and allows each room to be a complete unit in itself, there being no protrusions or extensions into adjacent rooms to break the general harmony of each room.

Thus the invention consists of a combination of structural features for the principal object of providing in a standard sized and equipped duplex type passenger car, an increased number of individual rooms over present day cars while maintaining maximum passenger comfort and convenience.

This and other objects will appear from the following description, accompanied by drawings wherein:

Fig. 1 is a longitudinal vertical sectional view of approximately one-half of a railway duplex car embodying the present invention;

Fig. 2 is a continuation of Fig. 1 to the end of the car;

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Fig. 3 is a horizontal sectional view of the car, showing in plan the upper room arrangement along one side of the car and the lower room arrangement along the other side;

Fig. 4 is an enlarged fragmentary portion of Fig. 3 showing a day and a night arrangement of both upper and lower rooms;

Fig. 5 is a vertical sectional view of the room arrangement taken along line 5—5 of Fig. 4;

Fig. 6 is a vertical sectional view of the room arrangement taken along line 6—6 of Fig. 4;

Fig. 7 is a vertical sectional view transversely of the car, taken along line 7—7 of Fig. 5;

Fig. 8 is a vertical sectional view, transversely of the car, taken along line 8—8 of Fig. 5;

Fig. 9 is a vertical sectional view, transversely of the car, taken along the line 9—9 of Fig. 5 and showing the relative locations of the upper and lower bedding lockers;

Fig. 10 is a vertical sectional view transversely of the car, taken along the line 10—10 of Fig. 5; and

Fig. 11 is a perspective view of upper and lower rooms along one side of the car, taken from the passageway with a portion of the passageway partition broken away to depict more clearly the duplex interior room arrangement.

Referring now to the drawings, a standard sized railway car is depicted having a center sill 20 supporting transversely extending end sills 21 at each end of the car, end walls 22, bolsters 23, crossmembers 24, and floor supports 25. A roof 26 and side walls 27 with windows 28 are provided, there being a center space 29 intermediate the room ceilings 30 (Figs. 7—10) for air conditioning purposes. The usual sub flooring 31 is provided for insulating material 32, and a center passageway 33 having a floor 34, which floor is spaced above the insulating cover 35 over the center sill 20 to provide a duct 35a for the passage of air, divides the car into two longitudinal portions. The car, in addition to the individual rooms to be hereinafter described, has included therein as standard equipment an air conditioning unit 36, a general toilet 37, an electric locker 37a, and linen storage lockers 38 at each end, as well as a vestibule 38a at one end. The air ducts 29 and 35a provide means through which cold or hot air may be passed and led off into the rooms, for air conditioning or heating purposes, by various piping arrangements, not a part of this invention. Other heating arrangements, such as panel or fin radiator-type heating may be used.

The individual rooms on each side of the passageway aisle 33 comprise upper and lower rooms 39 and 40 wherein the floor area of the upper room is interposed between each lower room and the seat of each upper room is in vertical alignment with each lower seat, though facing in the opposite direction. Each lower room has a separate hopper 41, folding washbasin 42, mirror 43, mirror light 44, adjustable seat 45, seat light 46, window 28, bedding locker 47, shoe locker 48, and luggage space 49. The entrance to each lower room is by an ordinary folding door 50, whereupon a step down to the floor 51 is required, the depressed floor providing extra standing room height. The floor may be of any commercially available material and is depressed only between supports. It is supported at one end by a floor support 25 and at the other by an angle member 52 secured to a cross member 24, except adjacent the bolsters 23 where floor supports 25 are provided at each end of the room floor. The sides of the floor 51 are secured to the base of the side wall 27 and to the base of each aisle wall 79. In the day position the seat back 53 and seat cushion 54 are in their usual position facing the bedding locker 47, the seat cushion 54 resting on a seat support 55, with the arm rests 56 either up or down. In the bedding locker,

a linen covered rubberized topper 57, a pillow 58, blankets 59, and a portion 60 of the bed are provided, the locker having a bottom 47a somewhat above the seat height and a wall 47b dividing it from shoe locker 48.

When the lower room 40 is to be readied for sleeping purposes, a bedding locker hinged door 61 is let down, assuming a stable horizontally disposed shelf position, wherein the door is longitudinally aligned with the bedding locker floor 47a and upon which the seat cushion 54 and a substantial edge portion of the seat back 53 are placed, the other end of the back resting upon a shelf 62 which is hidden behind the back 53 during the day and which is longitudinally aligned with and in the same horizontal plane as the open door 61. Support is given the hinged door 61 by a pair of hangers 63 which are slidable in a pair of tracks 64 within the locker 47 for open and closed positions. The bedding equipment is then removed and placed in position thus forming a completed bed 65. Thus by this novel means of raising the seat from its usual position and combining it with a bed portion from a hinged locker within the room, and by using the locker space for the lower extremities of the person sleeping, the utmost efficiency of the lower room length is obtained, eliminating extra beds, or bulky beds in recesses not usable at night. It is to be noted that when the lower rooms are made up for sleeping, only the necessary room separating wall partitions 66 separate each longitudinally placed bed, that standing room remains adjacent the bed 65, and that the toilet and lavatory facilities may be used at night without any shifting of appliances.

The upper room 39 has facilities which are identical with those of the lower room, in fact interchangeable therewith, in structure, the arrangement also being quite similar though it faces in a direction opposite to that of the lower. To enter the upper room, a step 67 is provided which protrudes slightly into the center aisle 33. The door 50 opens into the room over the floor 68 which is also the top of the bedding locker 47 and shoe locker 48 in the lower room 40, extending transversely thereover. The hopper 41, folding washbasin 42, mirror 43, mirror light 44, adjustable seat 45, and seat light 46 are all on the left as viewed in Fig. 6. On the right is a bedding locker 69 adjacent the car side wall 27 having a side spaced from the aisle 33 and a bottom 71 which is the horizontally disposed transversely extending ceiling over the main standing room area of the lower room 40. A shoe locker 72 and luggage space 73 are provided above the bedding locker 69 for the upper room 39. To change the day seating arrangement to a night sleeping arrangement, the hinged door 61 is let down to a horizontal position, being supported by the longitudinally movable hangers 63 in their tracks 64, whereupon the seat cushion 54 and a substantial edge portion of the seat back 53 are placed on the hinged door 61 at a level much higher than the day position of the seat cushion, the other edge or end of the back 53 resting securely on a shelf 74, in conjunction with the bed portion 60 in the locker 69. The bedding elements are then removed from the locker and placed in position. As in the lower room, standing room remains adjacent the bed 65 and complete use of the toilet and lavatory facilities is available at all times. As the necessary standing height of the lower room determines the vertical location of the fixed bed portion 60 in the upper room, the arrangement whereby the seat 45 is aligned with the portion 60 to make a complete bed 65 contributes greatly to the combination of features culminating in the increased number of individual rooms. By this arrangement, the longitudinal space, in each upper room over the lower room standing space, usually unusable for the upper room bed, is used for its entire length and substantially its entire width for a portion of the upper room bed, and the necessary length for each upper room is only that sufficient for a longitudinally disposed bed, the aligned beds being separated

only by a room wall partition. Also due to this arrangement, each upper room bed is located substantially longitudinally centrally over the beds in the two adjacent lower rooms.

For the economy of space, the toilet and washing facilities are grouped together, as best shown in Fig. 6; in fact, these facilities may be fabricated in one complete unit. In the lower room, adjacent the aisle 33, is the hopper 41 and its drain 75, and directly behind the hopper and foldable down over the hopper is the washbasin 42 with drain 76. Directly behind the lower room washbasin are the drains 77 and 78 for the washbasin and hopper of the upper room 39. For clearness, the water supply connections have been omitted.

The partitioning of the individual rooms comprises a vertically disposed aisle wall 79 for each side of the center passageway aisle 33. Inside each room, extending from the aisle wall 79 to the side wall 27, is a transverse, vertically disposed partition 80 which depends from the ceiling to the level of the upper end of the washbasin 42 adjacent the aisle wall in the upper room lavatory area as best seen in Figs. 6 and 8. Here, the partition 80 is joined at right angles by a liner shelf 81, which defines the top of the recess for the washbasin, in the upper room 39. From midway under the shelf 81, a transverse portion 82 depends a sufficient distance for the placement thereon of the lower room mirror 43, light 44, and a linen shelf 83. Then the partition 82 slants to accommodate the lower room washbasin 42 (Fig. 11), ending at the hopper stand 41, which extends to the floor 51. Also from the shelf 81, the upper room washbasin 42 is placed therebelow being hingedly connected to the upper room hopper 41, from the outer edge of which a partition 84 depends to the floor 51. These aforementioned parts, beginning with the common upper partition 80, may then be said to be a forward separation or partitioning group from ceiling to floor for the lavatory facilities, "forward" being used merely for convenience.

The parts comprising the forward partitioning or separation group for the seat and bed facilities transversely adjacent the facilities group, as best seen in Figs. 5 and 7, also begin with the common upper partition 80 which depends from the ceiling 30 to a lower room ceiling 71 which ends beyond the partition 80 in an upper room to form a bed support shelf 74. A transverse, downwardly curving partition 85 extends from the shelf 74 to a position over the lower room seat, thereby performing the functions of a ceiling to the lower room seat area, and at the same time acting as a support for the upper room seat. The partition 85 is joined adjacent the forward edge of the upper seat by a transversely extending, vertically disposed wall portion 86, in substantially the same plane as the partition 84 with which it may be integral if desired, to separate each lower room 40 from the next lower room, the portion 86 acting as a back for the bedding locker 47 of one lower room and as an attaching wall for the bed support shelf 62 of the adjacent lower room, while the partition 84 forms the back of the shoe locker 48 and of the luggage space 49. Thus the transverse forward separation for the seat and bed area, comprises the partitions 80, 85, and 86; whereas the forward separation for the facilities area comprises the partition 80, portions 81, 82, and the combined hopper and washbasin units. By referring to Figs. 4 and 11, it may be noted that the aisle wall 79 provides a longitudinal partition on the aisle side of the lavatory facilities group whereas an inner partition 84a extends longitudinally from the partition 82 to form an inner wall for the upper washbasin and from the partition 82 and the outer edge of the lower room hopper 41 to the vertically depending partition 84 (Fig. 6).

The rear partitioning separation for the lavatory facili-

ties area can best be seen by referring to Figs. 6 and 10. The partition 80 is joined by a horizontally disposed, transversely extending partition 87 which is the ceiling for the lower room adjacent the toilet facilities and defines the bottom of the shoe locker 72 and luggage space 73. At the other end of the ceiling 87, a vertically depending wall partition 88 is joined thereto extending transversely from the passageway partition to the side wall and being cut away along the side 70 and bottom 71 of the bedding locker 69. The partition 88 extends down to where it is joined at its base by the floor 68 of an upper room, the floor being secured at its other transverse edge to partition 84. The rear separation for the seat and bed area of the lower room 40 may best be seen by referring to Figs. 5 and 10. The partition 80 depends until it reaches the lower room seat and bed ceiling 71 whereupon the ceiling 71 joins the aforementioned wall partition 88. Thus the transverse rear separation for the seat and bed area comprises the partition 80, ceiling 71, partition 88, floor 68 and partition 86; whereas the rear separation for the facilities area comprises the partitions 80, 87, 88, floor 68, and the partition 84.

It is to be noted that each lower room 40 is surrounded by four other individual rooms (Fig. 5). Excepting the rather complicated and transversely short lavatory facilities separation, which may be simplified by comparing the upper room washbasin shelf 81 and hopper seat cover 89 (Fig. 6) to the downwardly curving partition 85 (Fig. 5) and by comparing the depending wall portion 84 (Fig. 6) to the wall portion 86 (Fig. 5), each lower room is substantially separated from a rear lower room by a wall portion 86; from a rear-upper room by a bedding locker floor 71, a partition 88, and a floor 68; from a front upper room by a downwardly curving partition 85; and from a front lower room by a wall portion 86. Each upper room 39 is also surrounded by four rooms, it being substantially separated from a rear upper room by a wall partition 80; from a rear lower room by a downwardly curving partition 85; from a front lower room by a bedding locker floor or lower room standing height ceiling 71, both being the same, a partition 88, and the upper room floor 68; and from a front upper room by a partition 80. It is to be understood the front refers to those objects to the right as one looks at the illustrations according to the figure references, the rear being to the left.

Thus it may be seen that a duplex-type car is disclosed, which has a center aisle and alternating individual upper and lower rooms on each side thereof, there being possibly twelve (12) upper rooms on each side, twelve (12) lower rooms on one side, and eleven (11) lower rooms on the other side; in addition to the standard railway car facilities. Each individual room includes a seat by day, convertible to a bed by night, lavatory facilities and luggage space, thereby providing for the complete comfort of the room occupant. In brief, these objects are obtained by a combination of structural devices and by an efficient room arrangement whereby it is possible, in a standard sized duplex car, to have the beds in all the upper rooms in alignment and separated only by a wall partition, and to have the beds in all the lower rooms in alignment and separated only by a wall partition.

What is claimed is:

1. A passenger car having a center passageway extending longitudinally thereof and alternating upper and lower individual rooms on each side of said passageway, two lower rooms and an upper room having a floor level depending between said lower rooms, each room containing a collapsible seat having a back and a cushion on one side of said room facing a locker on the opposite side of the room, said locker containing a fixed bed portion and having a hinged door operable to assume a stable

horizontal position in front of said locker, and a shelf abutting from a wall partition behind said seat, said cushion and a substantial edge portion of said back being horizontally placed upon said door in alignment with said fixed bed portion and the opposite edge portion of said back being placeable upon said shelf thereby forming a bed, the beds in the upper and lower rooms extending longitudinally, said lower room beds being aligned and separated only by a wall partition, and said upper room bed being located substantially longitudinally centrally over the two lower room beds.

2. The combination of a duplex-type passenger carrying vehicle having a single longitudinal center aisle, spaced partitions defining individual alternately vertically staggered upper and lower passenger rooms, said upper rooms being disposed entirely above the level of said aisle and said lower rooms each having a floor portion disposed below the level of said aisle, said lower rooms each having a portion extending between two adjoining upper rooms, adjustable seats in said rooms each having a cushion and a back and means leading from said aisle to said seats, supporting shelf means adapted to support said back, said shelf means being behind the seat and adjacent one wall of the room, bedding means including a bedding locker and a fixed bed portion, and a hinged door on said locker operable to assume a stable horizontal position in front of the locker, said back and said cushion being horizontally placed on said supporting shelf means and said door respectively in longitudinal alignment with said fixed bed portion whereby to form a bed.

3. The combination of a duplex-type passenger carrying vehicle having a single longitudinal center aisle, a plurality of rooms on each side of said center aisle having spaced partitions defining individual alternately vertically staggered upper and lower passenger rooms, said upper rooms being disposed entirely above the level of said aisle and said lower rooms each having a floor portion disposed below the level of said aisle, said lower rooms each having a portion extending between two adjoining upper rooms, adjustable seats in said rooms each having a cushion and a back and means leading from said aisle to said seats, supporting means adapted to support said back, and bedding means including a bedding locker and a fixed bed portion, there being an adjustable seat, supporting means, and bedding means in each individual room, said bedding means comprising a bedding locker facing the seat and containing a fixed bed portion and bedding equipment, a door closing said bedding locker, and said supporting means comprising a horizontally disposed shelf behind the seat, said door being hingedly connected to said locker and operable to assume a stable horizontal position in front of the locker, whereby a portion of said back may be horizontally placed on said shelf and said cushion and a portion of the back on said door in longitudinal alignment with said fixed bed portion thereby forming a bed.

References Cited in the file of this patent

UNITED STATES PATENTS

60	2,208,679	McCarrol	July 23, 1940
	2,241,377	Clemens	May 13, 1941
	2,464,749	Murphy	Mar. 15, 1949
	2,536,194	Loewy	Jan. 2, 1951
65	2,545,523	Loewy	Mar. 20, 1951
	2,548,292	Eksergian	Apr. 10, 1951
	2,548,294	Lyon	Apr. 10, 1951
	2,556,140	Lyon	June 5, 1951
	2,561,630	Murphy et al.	July 24, 1951
70	2,567,894	Reinke et al.	Sept. 11, 1951
	2,599,606	Burgess	June 10, 1952
	2,622,544	Watter	Dec. 23, 1952
	2,724,347	Watter	Nov. 22, 1955
75	2,743,683	Calhoun	May 1, 1956