Feb. 14, 1939. D. A. CRAWFORD 2,147,011

RAILWAY CAR

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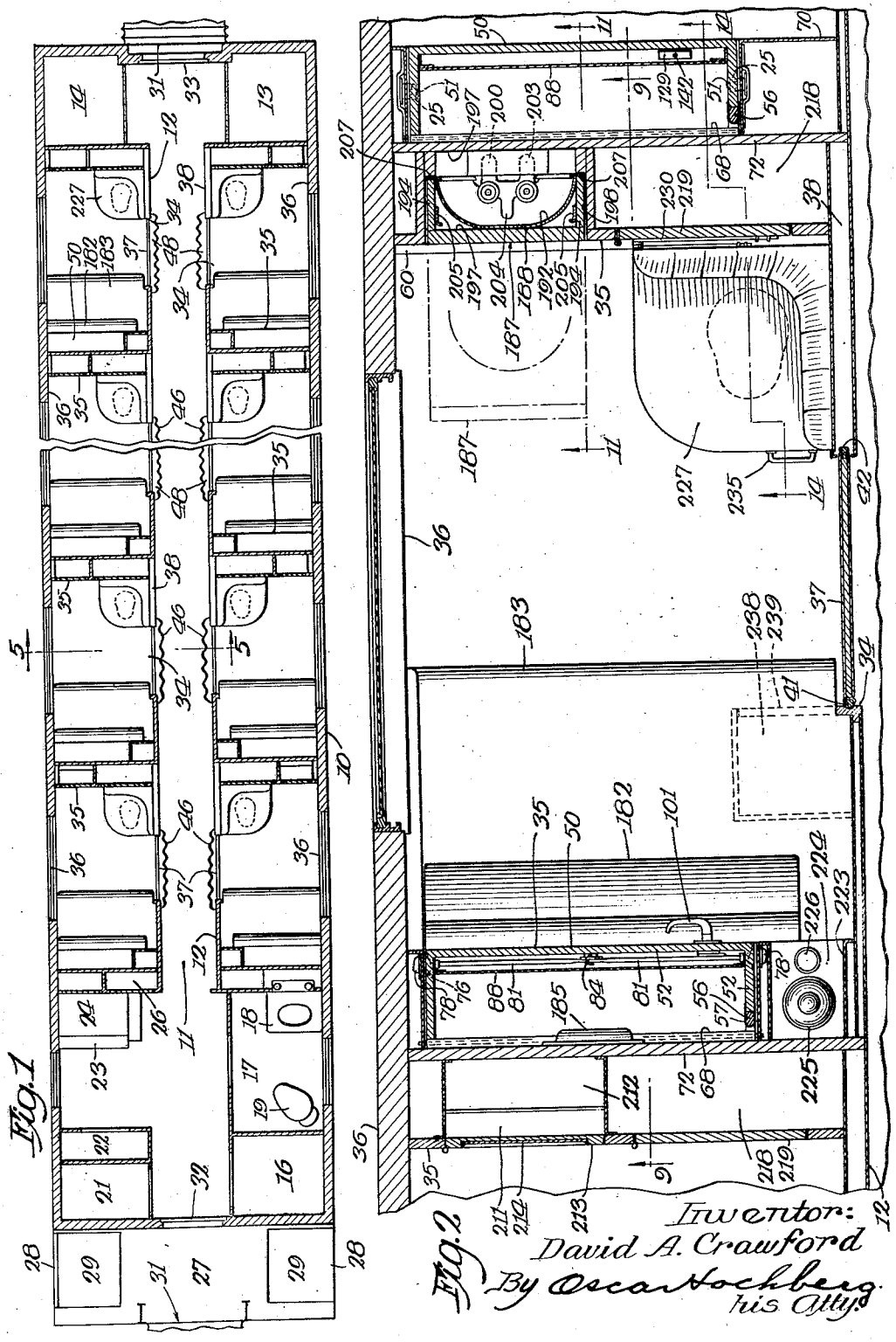


Fig. 1

Fig. 2

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RAILWAY CAR

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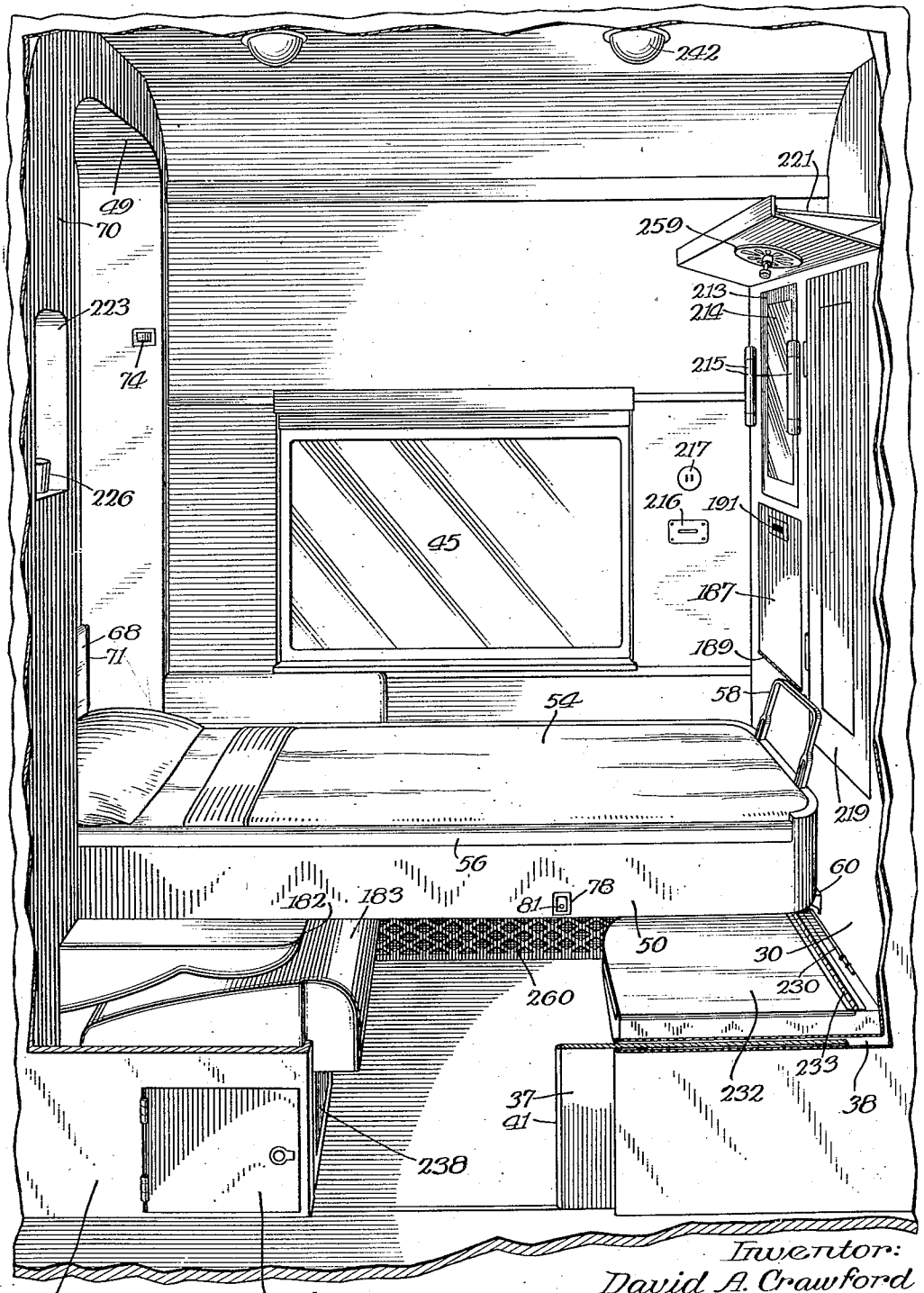


Fig. 3

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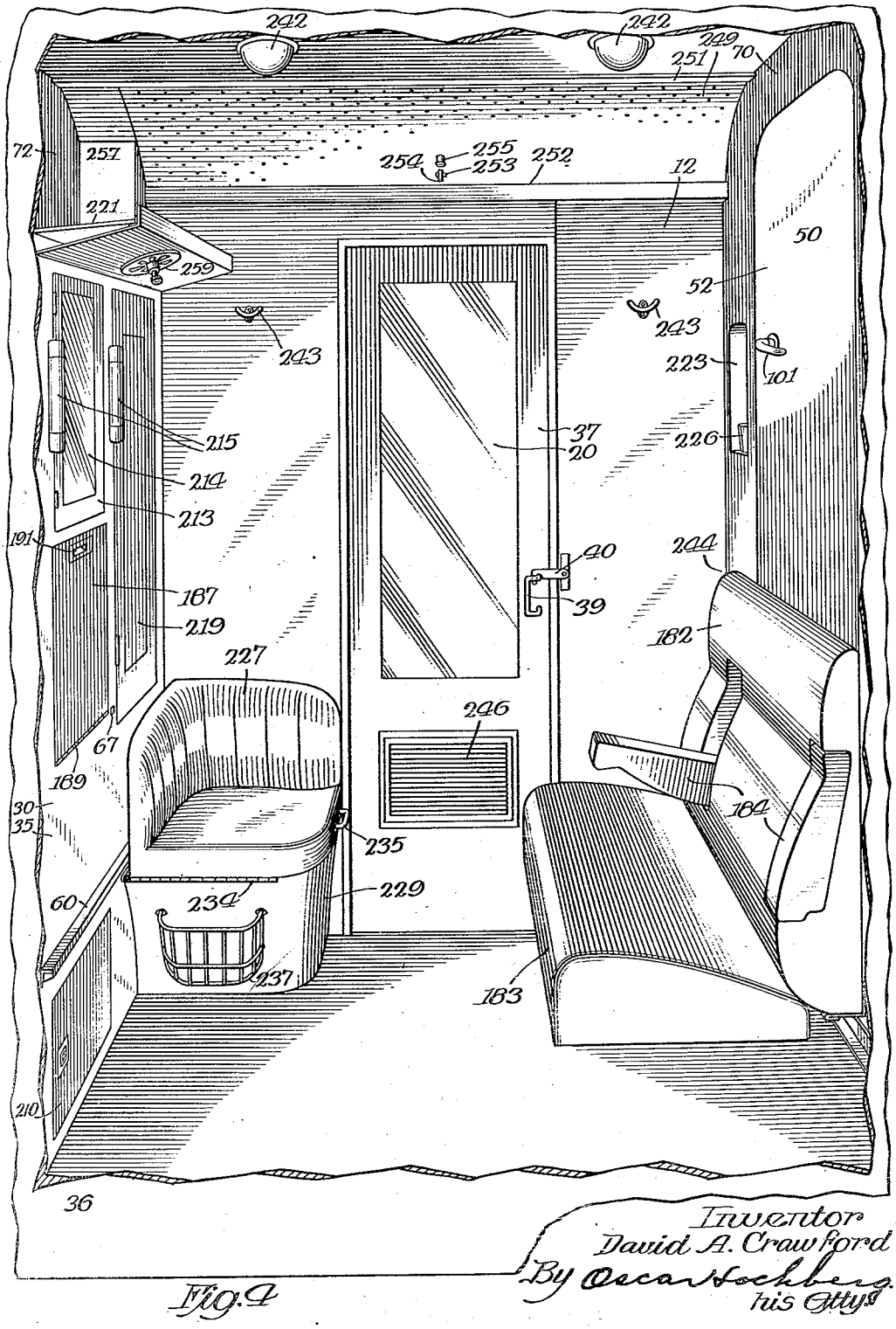


Fig. 1

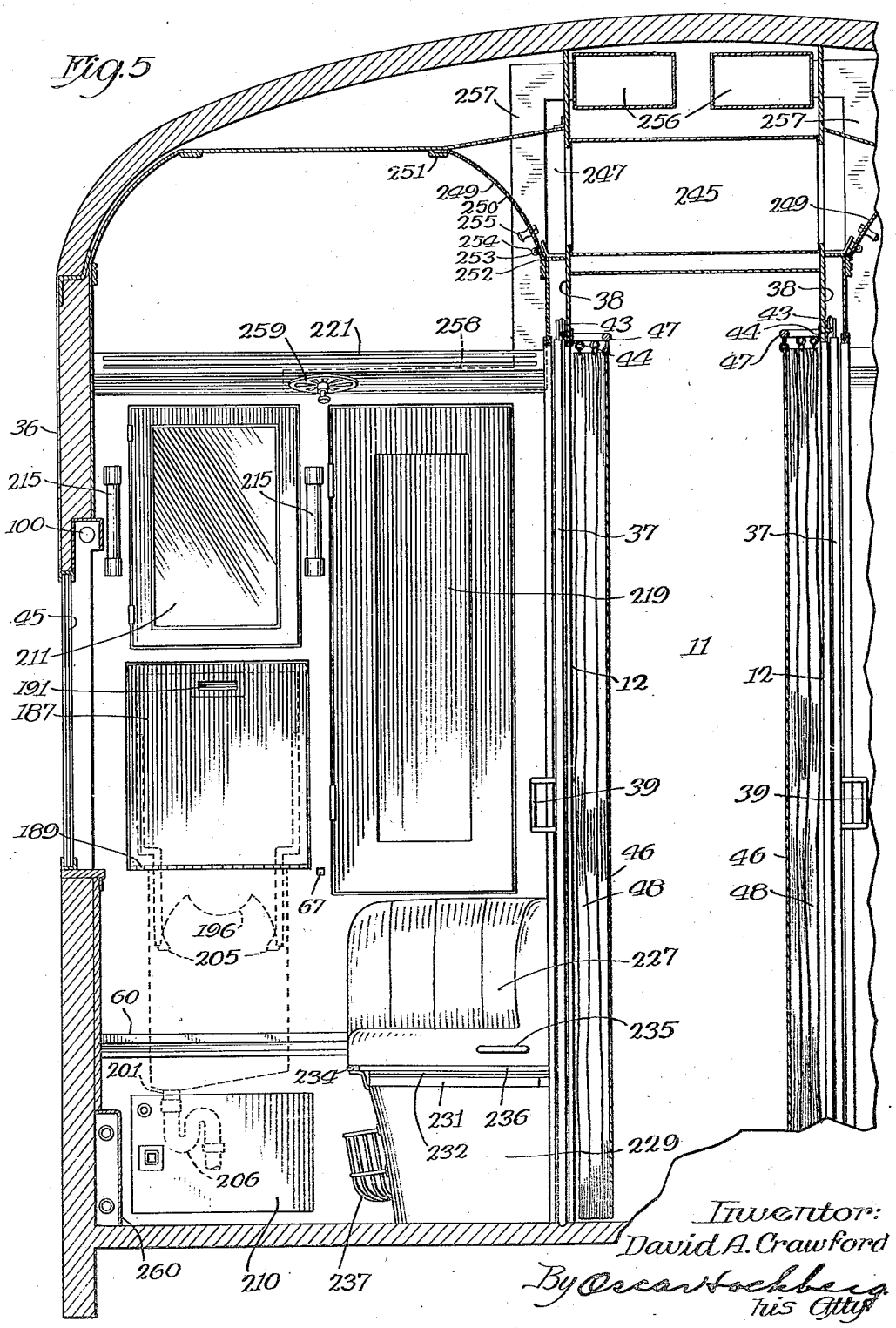
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RAILWAY CAR

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Fig. 5

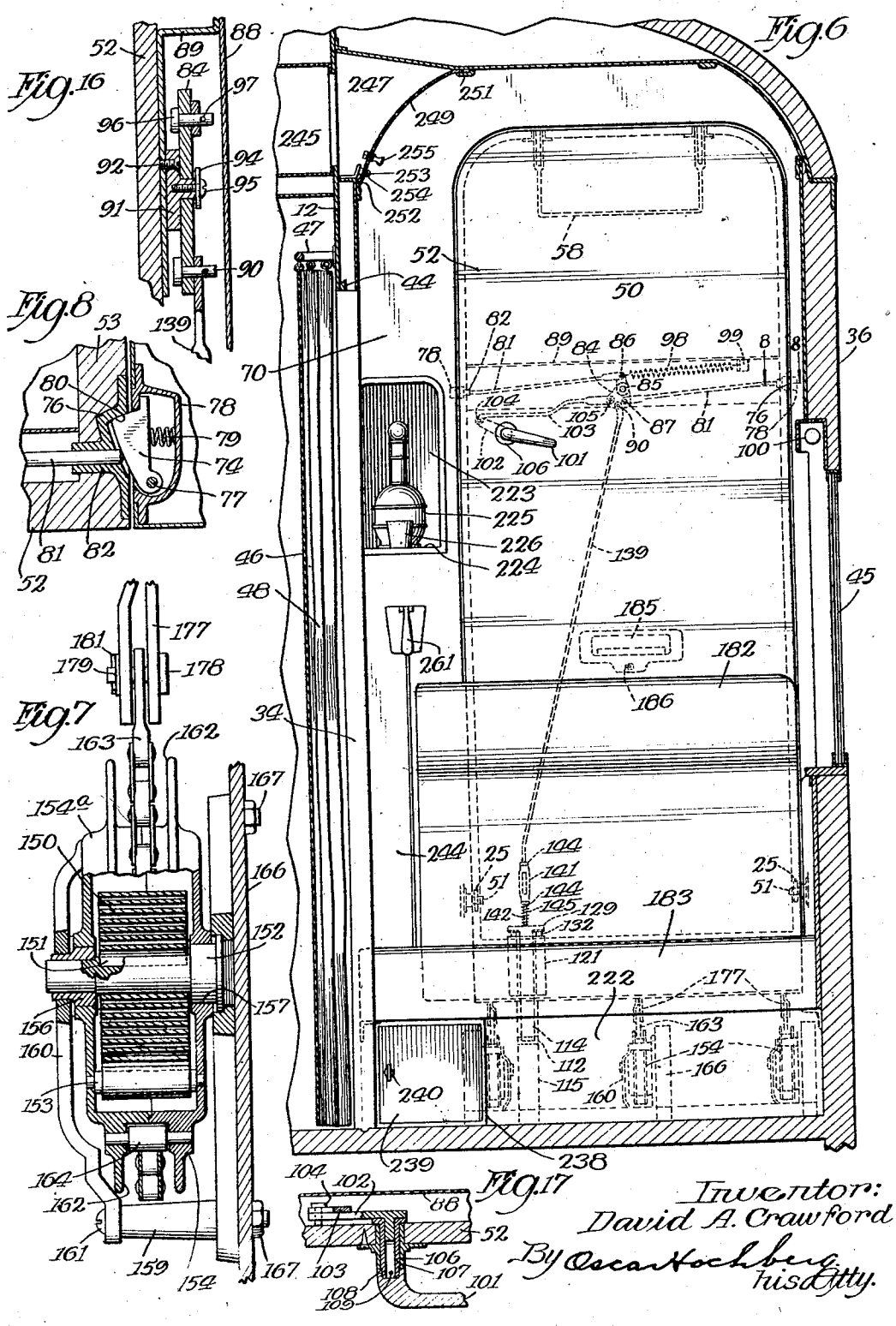


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RAILWAY CAR

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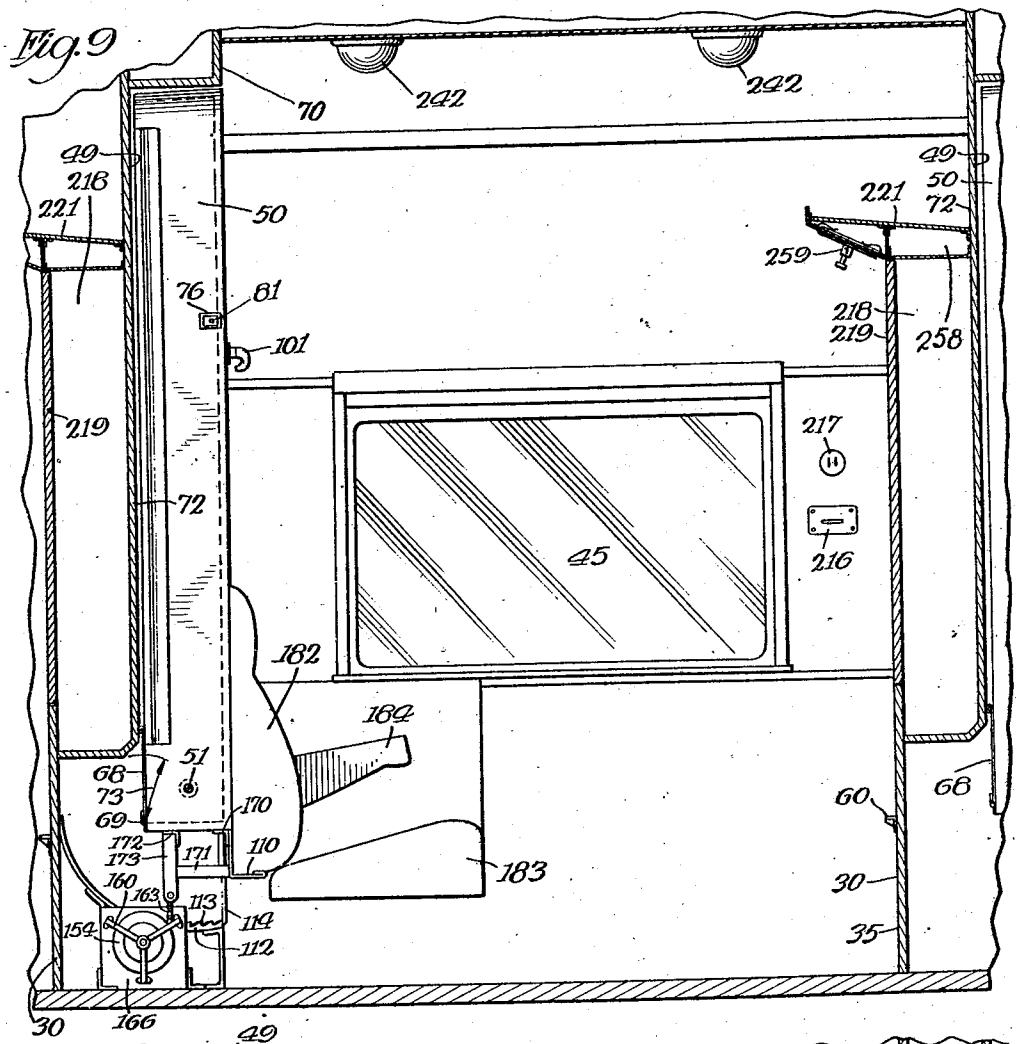


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Fig. 9



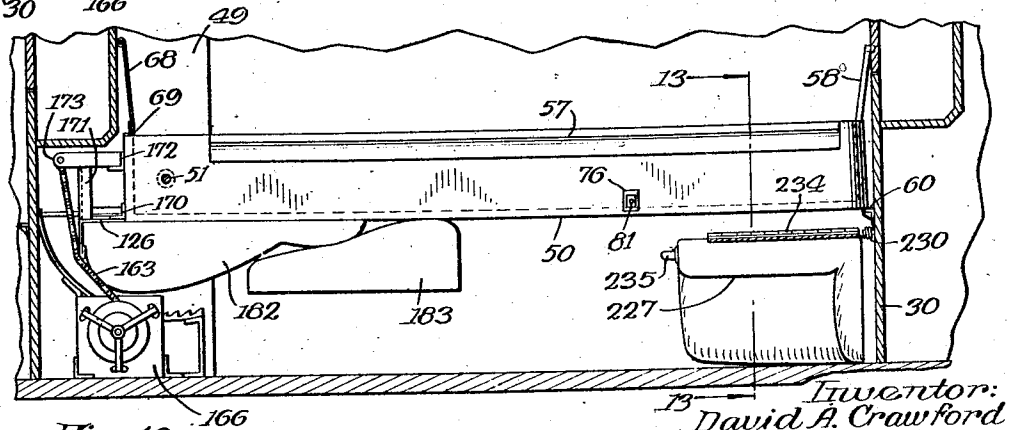


Fig. 10

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Fig. 11

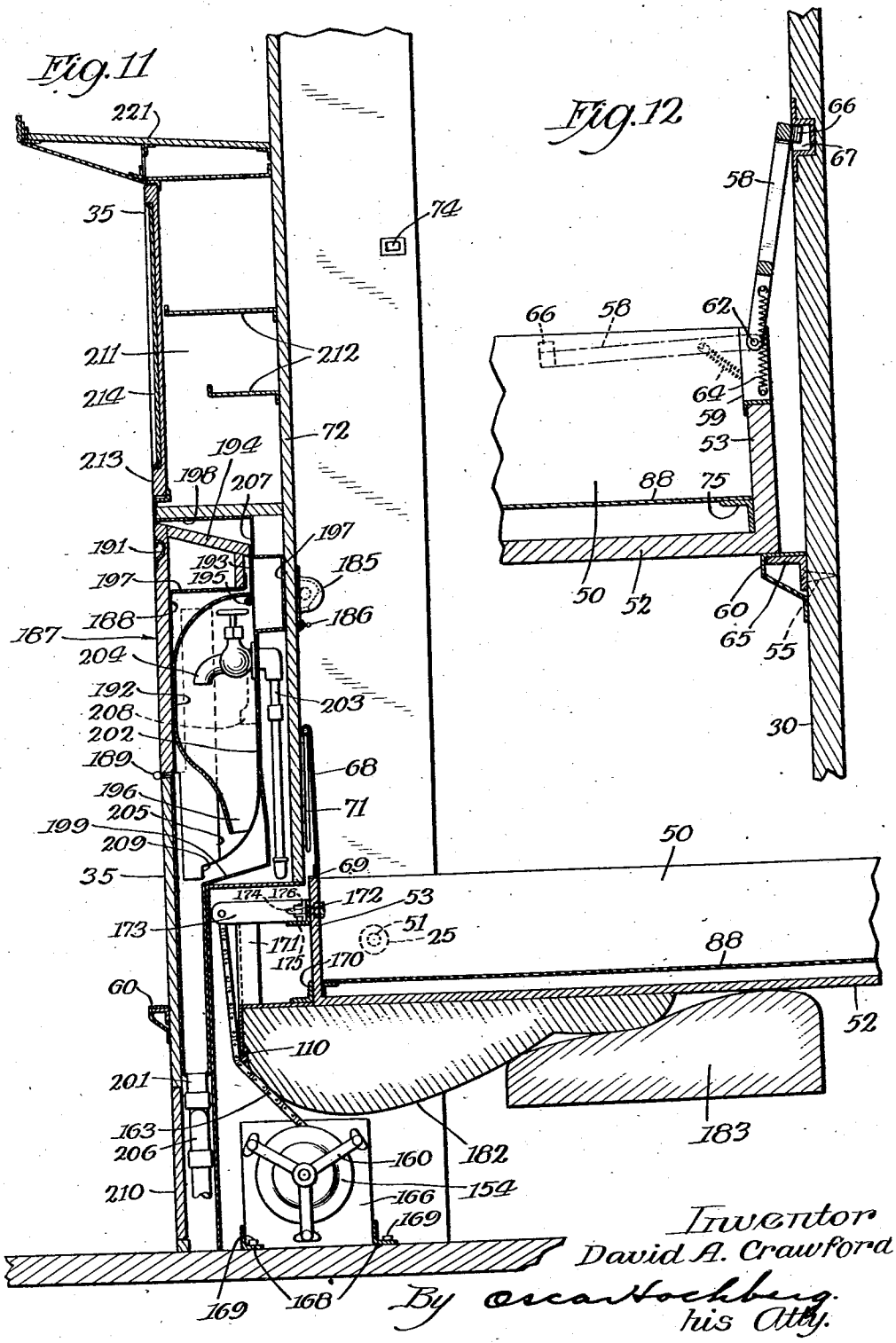


Fig. 12

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Fig. 15

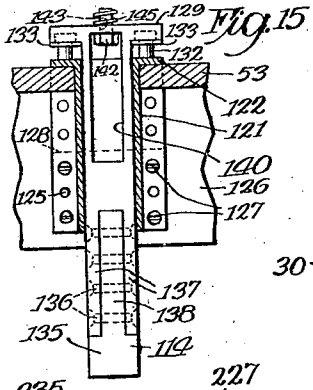
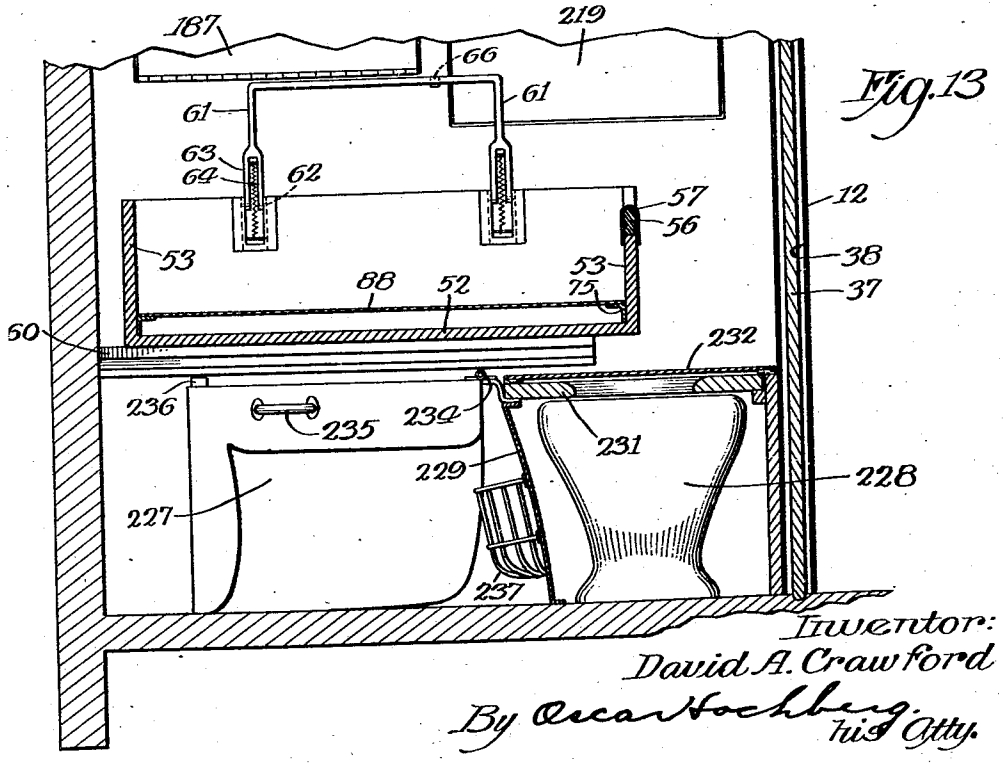


Fig. 14

Fig. 13



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Patented Feb. 14, 1939 2,147,011

UNITED STATES PATENT OFFICE

2,147,011

RAILWAY CAR

David A. Crawford, Golf, Ill., assignor to The Pullman Company, Chicago, Ill., a corporation of Illinois

Application May 29, 1937, Serial No. 145,424

34 Claims. (Cl. 105—315)

The invention relates to railway sleeping cars and has for its principal object the provision of a car having permanently separate and independent compartments upon opposite sides of a central aisle, each having complete toilet facilities and a bed foldable endwise longitudinally of the car into a partition accommodating practically all accessories incident to the compartments—including a folding washbasin with necessary drains and fittings, a medicine cabinet for toilet articles, a clothes closet, operating and balancing mechanism for the folding bed, and space for individual drinking articles.

The foregoing and other objects are attained by the construction illustrated in the accompanying drawings, in which

Fig. 1 is a partial plan view of a railway car constructed in accordance with the teachings of this invention;

Fig. 2 is an enlarged plan view of a single section of the car showing the construction of partitions in that and an adjoining compartment;

Fig. 3 is a perspective view looking into a compartment from the aisle position and showing the folding bed in its lowered position ready for use;

Fig. 4 is a perspective view from within the compartment looking towards the aisle partition and illustrating the section as made ready for day use with the folding bed raised and the hinged hopper seat in position;

Fig. 5 is a cross-sectional view looking towards the cabinet and washbasin side of the partition and showing the conditioned air distributing arrangement, and taken on the line 5—5 of Fig. 1;

Fig. 6 is also a cross-sectional view looking at the reverse side of the partition showing the folding bed and balancing arrangement and locking mechanism;

Fig. 7 is a cross-sectional view through one of the balancing devices;

Fig. 8 is a fragmentary, sectional view through the folding bed and partition at the lock position and illustrating the retractable lock mechanism;

Fig. 9 is a longitudinal sectional view through a compartment taken on the line 9—9 of Fig. 2 showing the folding bed in raised position and the balancing mechanism and safety ratchet arrangement used in lowering the bed;

Fig. 10 is a view similar to Fig. 9 but with portions broken away and showing the bed in lowered position;

Fig. 11 is a sectional view, to a larger scale, longitudinally of the car through a partition taken on the line 11—11 of Fig. 2 showing the folding washstand and bed in their open positions and illustrating the relation of the seat back to the seat proper when lowered;

Fig. 12 is a fragmentary, sectional view through the foot of the bed illustrating the support for that end of the bed when in the lowered position and the mechanism for holding the bed down;

Fig. 13 is a transverse, sectional view through a compartment at the enclosed hopper position taken on the line 13—13 of Fig. 10 with the bed lowered and held in position by the mechanism for that purpose and showing the hinged hopper seat in lowered position;

Fig. 14 is a longitudinal, sectional view through a partition at the hopper position taken on the staggered line 14—14 of Fig. 2 and showing all of the parts in their normal position;

Fig. 15 is a fragmentary detail view showing the safety ratchet for preventing accidental dislodgement of the bed;

Fig. 16 is a fragmentary, vertical, sectional view through the eccentric operating the bed-locking mechanism; and

Fig. 17 is a fragmentary, horizontal, sectional view through the bed-operating handle showing its connection to the operating mechanism.

In the drawings, 10 represents a railway car having a central, longitudinal aisle 11 defined by partitions 12 more fully hereinafter to be described. At one end the car is provided with a linen locker 13 and baggage space 14 upon respectively opposite sides of the central aisle and at the other end is provided, on one side, with a linen locker 16 and a general toilet 17 having a washstand 18 and a hopper 19 and, at the opposite side, with an equipment locker 21, an electric locker 22, a folding seat 23 for a porter, space 24 for a water cooler and a control panel locker 26. At this latter end the car is provided with a vestibule 27 having the usual side doors 28 and trapdoors 29 covering steps (not shown) and providing access to the car from either of the respective sides or from an adjoining car through passageway 31, but, at the opposite end, entrance to the car is had only through the passageway 31. End door 32 closes the aisle space 11 from the vestibule 27, and door 33, at the opposite end of the aisle, closes it from the passageway 31.

The aisle partitions 12 are each provided with a plurality of doorways 34 opening into individual compartments formed by partitions 35 extending transversely between and in conjunction with the respective aisle partitions and car sides 36. As best shown in Fig. 2, the doorways

34 are closed by sliding doors 37 received in their respective open positions in pockets 38 provided therefor in the aisle partitions 12 and operated by means of handholds 39. The doors 37 may be locked from inside the respective compartments by means of simple latches 40 pivoted on the inner side of partitions 12 in each of the compartments in position to engage the handholds 39. Rubber bumpers 41 and 42 are provided at the front and rear edges of the doors, respectively, for absorbing shocks in opening and closing. As shown in Fig. 5, each door is suspended and runs on rollers 43 engaging a track 44 supported from the aisle partition 12 above the doorway 34 and within the pocket 38. Curtains 46, draped from supporting rods 47, provide individual, enclosed bay spaces 48 at the respective doorways 34 when the doors 37 are in their open position—affording more room for manipulating certain accessories hereinafter described.

Each of the private compartments is provided with complete facilities for day and night occupancy, and practically all of these facilities are contained in the partitions 35. The individual items, certain of which are foldable into the partitions, are entirely independent and, when closed, allow full utilization of available space in each compartment to the greatest comfort and convenience of the occupant. The principal item enclosed within each of the partitions 35 is a bed 50 foldable into the recess 49 provided therefor in the partition and in the side walls of which it is pivotally supported as at 51. The bed comprises an open-top box-like receptacle having a bottom wall 52, which forms a part of the interior finish in the compartment when the bed is closed, and marginal walls 53 confining the mattress 54 and bedding. As best shown in Figs. 3 and 13, the marginal wall 53, remote from a wall of the compartment, is cut away adjacent its upper edge and the cutaway portion replaced by a cushioning element 56 which is held in place by a fabric covering 57 secured to the wall 53 so that a person getting into or out of bed or sitting on the bed will not be conscious of an otherwise hard and unyielding edge of the bed frame, and is protected from possible injury. The mattress 54, when the bed is in the vertical, closed position shown in Fig. 4, is held in place by means of a spring-actuated retaining frame 58, shown in detail in Figs. 12 and 13, which is mounted upon the end wall 53 of the bed uppermost in that position. Brackets 59 are set in the end wall adapted pivotally to receive the spaced, parallel end portions 61 of the U-shaped brace 58 which, adjacent the pivot points 62, are each provided with spaced jaws 63 to receive tension springs 64 extending between the lower extremities of the brackets 59 and the upper portions of the jaws 63 in position to exert a force on the frame 58 directed towards the mattress 54 as the point of connection of the springs 64 to the jaws 63 passes dead center at the pivot point 62 in line with the point of connection of the springs with the brackets 59. The frame 58 serves the further function of acting as a brace between the bed and partition 35 to insure retention of the bed in lowered position when it is made ready for occupancy. A projection 66 on the crossbar of the frame 58 enters a recess 67 provided therefor in the partition 35 adjacent that end of the bed, and is held in engagement therewith by the tension of spring 64 as it passes dead center in a direction towards the partition.

At the opposite, or pivoted, end of the bed, the mattress and bedding are prevented from falling from the bed, as it is raised or lowered, by a vertically slidable headboard 68 hingedly connected to the end wall 53 of the bed, as at 69, and slidingly guided in slots 71 in the opposite side walls of the recess 49 accommodating the bed. The headboard 68, as the bed is raised, slides from its uppermost location, as shown in Figs. 10 and 11, where it is in juxtaposition to the panel 72 dividing partition 35 into independent portions associated with separate adjoining compartments, downwardly with the pivoted end of the bed, as shown in Figs. 9 and 14, to cover the space 73 otherwise remaining open between the lower edge of the panel 72 and the end wall 53 of the bed.

The bed 50, in its vertical, closed position as best shown in Figs. 3, 6, 8, 9 and 11, is securely locked by retractable plungers 74 set in the side walls of the bed recess 49 and engageable with keepers 76 in the opposite side walls 53 of the bed. The plungers 74 are pivotally mounted at 77 in brackets 78 set in the respective side walls of the recess 49 flush with the surfaces thereof so that the plungers 74 project therebeyond under the influence of coil springs 79 in position automatically to engage shoulders 80 of the respective keepers 76 in the bed as it is pushed to its final closed position. The plungers 74 and keepers 76 are set in their respective members closely adjacent the surfaces of the partition 35 and of the bed 50, and the plungers 74 are retracted by means of push rods 81 reciprocable through bearings 82 in the keepers 76 to press the plungers from engagement with shoulders 80 into pockets 83 provided therefor in the brackets 78 and allowing the bed then to be lowered. It will be noted that it is unnecessary for the ends of the push rods 81 to project beyond the surface of the side walls of the bed in order to release the plungers 74. The rods 81 are reciprocated by means of an eccentric 84 fulcrumed at 85 upon the inner side of the bed bottom 52 and to which the push rods are pivotally connected at 86 and 87 upon diagonally opposite sides of the fulcrum 85. The operating mechanism is mounted between the bed bottom 52 and an inner false bottom 88 spaced from the bottom 52 and extending over the entire area of the bed. This false floor is supported by angle members 75 secured to the side and end walls of the bed and continuously underlying the edge of the false floor and, at the position of the transversely extending mechanism, by a Z-shaped reinforcing plate 89 upon which the eccentric 84 is mounted and held in spaced relation thereto by a spacing block 91 secured to the plate 89 by machine screws 92 and having a trunnion 93 upon which the eccentric seats. A washer 94, held to the trunnion by a screw 95, holds the eccentric 84 properly in place upon the trunnion. The connections 86 and 87 between the push rods 81 and the eccentric 84 are effected by means of headed pins 96 passing through the eccentric and the flattened end portions of the respective rods and secured by cotters 97. The rods 81 are resiliently held in retracted position by a tension spring 98 extending between the connection 86 on the eccentric 84 and a stop 99 on the reinforcing plate 89 and tending to rotate the eccentric in a direction to withdraw the push rods from engagement with the plungers 74.

The eccentric 84 is rotated by means of a manually operable handle 101 disposed on the outer or exposed side of the bed bottom 52 in

position to be grasped by a person in the compartment to release the lock and lower the bed for occupancy. The handle 101 is directly connected, through the bed bottom, with a lever 102 which, in turn, is directly connected with the eccentric 84 by a strut 103 causing them simultaneously to rotate about their respective fulcrums when the handle is manipulated. The strut 103 is pivotally connected at 104 to the lever 102 and to the eccentric 84 at 105, the respective connections being effected by means of headed pins 96 and cotters 97 in the same manner as in the connections 86 and 87 between the push rods 81 and the eccentric. The handle 101 turns in a bearing 106 secured in the bed bottom, and the portion 107 of the handle extending through the bearing is detachable from the handle proper and is threaded thereinto at 108 and secured by a locking pin 109. The lever 102 for operating the eccentric 84 is fastened to the extension 107. It will be noted, as best shown in Fig. 6, that the handle 101 extends to that side of its fulcrum whereby a pull exerted thereon in a downward direction will cause the eccentric 84 to be rotated in a counterclockwise direction and that the direction of the pull exerted on the handle is in substantially the same general direction of the opening movement of the bed—so that practically one movement unlocks and opens the bed.

The handle 101, through the eccentric 84, serves the further purpose of releasing a safety ratchet mechanism 111 utilized to prevent the bed from suddenly being jarred or jolted to lowered position by movement of the car occurring during normal operation of a train. The mechanism 111, as best shown in Fig. 14, comprises an arcuate ratch 112 having teeth 113 on the inner side of the arc cooperable with a retractible ratchet 114 mounted on the car floor and bed, respectively, and adapted to prevent lowering of the bed until release of the ratchet. The ratch 112 may be composed of carbon steel or other wear-resistant metal and is supported from and secured to the car floor by means of brackets 115 and 116 welded to the back side of the ratch at 117 and 118 and secured to the floor by bolts 119, and is braced at its extremity from the wall 120 within the partition 35. The ratchet 114 reciprocates through a guide bracket 121 extending through the lower end wall 53 of the bed and having a flange 122 secured to the inner side thereof by countersunk screws 123. The bracket 121 is mounted upon and secured to a guide plate 124 by rivets 125, providing a complete bearing for the ratchet 114, and together secured to an extension plate 126 provided for a purpose hereinafter described, by machine screws 127 through a filler block 128. The ratchet 114 has a T-shaped head, the oppositely extending flanges 129 of which are disposed in juxtaposition to the top flange 122 of the guide bracket and each provided, on its lowermost side, with a circular pocket 131 adapted to receive a headed column of rubber 132 held in place by a perforated plate 133 through which the column protrudes and which is secured to the flanges 129 by screws 134. The rubber 132 engages the flange 122 to act as bumpers and reduce the sound of the ratchet mechanism as the bed is operated. The lower extremity 135 of the ratchet 114 may be of hardened, machined steel and is separable from the remaining portion of the ratchet and secured thereto by machine screws 136 taking both of the jaws 137 on the body of the ratchet and penetrating the tongue 138 on the part 135 entered therebetween. The ratchet 114 is connected with and operable from the eccentric 84 by means of an adjustable pull rod 139 pivotally secured to the eccentric at 90 by means which may be like the headed pin 96 heretofore described, which penetrates the flattened end of the rod and the eccentric and may be secured by a cotter like that shown at 97. The connection of the rod 139 to the ratchet is adjustable and resilient. The rod 139 stops short of the ratchet 114 and a turnbuckle 141 connects the rod with an inverted headed bolt 142 passing through an opening 143 in the head of the ratchet, thus providing a slip-joint connection therebetween. The bolt 142 is inserted through the opening 143 in the head of the ratchet 114 by means of an opening 140 provided for that purpose in the body of the ratchet. The threads on the rod 139 are right-hand and those on the bolt 142 left hand, so that by turning the buckle 141 the length of the rod may be adjusted as desired. After adjustment is made, locknuts 144 are drawn up tightly against opposite ends of the buckle to insure permanent accuracy of the original setting. Resiliency in the slip-joint connection is provided by a spring 145 encircling the bolt 142 and extending between the lower locknut 144 and the head of the ratchet 114 and normally pressing the head of the ratchet against the head of the bolt 142 so that the bed 50 may be closed without operating the handle 101, and the ratchet 114 will automatically engage the teeth 113 of the ratch 112 under pressure of spring 145. Thus it will be seen that when the handle 101 is manipulated to operate the eccentric 84 to retract plungers 74 by means of push rods 81 so that the bed 50 may be lowered, the ratchet 114 will also be retracted by means of the pull rod 139 releasing it from engagement with the teeth 113 of the ratch 112, whereby the bed is then free to be placed in its lowered position.

As best shown in Figs. 6, 7, 9, 10, 11 and 14, the weight of the bed 50 is so balanced by mechanism herein described that it may readily and without great effort be operated by the passenger occupying the section. The mechanism comprises a plurality of torsional spring devices operating in parallel, firmly mounted upon the floor of the car at the bed position and connected to the bed in such manner as to exert a force on the bed tending to close it, whereby the person operating the bed is relieved of its weight in the closing movement, and, in opening, the very weight of the bed balances the resistance offered by the torsional spring mechanism. The balancing mechanism comprises a torsional spring 150 having its inner end anchored at 151 in a fixed axle 152 and its outer end secured at 153 to a sheave 154 housing the spring 150 and rotating upon bearings 156 and 157 on the axle 152 at opposite sides of the spring. The axle 152 at one end is fixed against rotation in a spider bracket 158 from which legs 159 extend to engage and secure by screws 161 a complemental spider 160 providing a support for the opposite end of axle. For the purpose of assembly, the sheave is comprised of two sections 154 and 154a, each having a radial flange forming, when assembled, a groove 162 into which a flexible chain 163 is secured at 164 and in which the chain winds and unwinds about the sheave as the mechanism is operated. As shown in the drawings, there are three of these complete mechanisms for each bed, and each device is secured to a plate 166 by bolts 167 having countersunk heads, and these plates, in turn, are secured between a pair of angle members 168 preferably by

welding and the complete assembly secured to the car floor as a unitary structure by means of bolts or screws 169. The flexible chains 163 are connected to extensions 173 secured to and depending from the lower or pivoted end of the bed, increasing the leverage and providing greater power to the mechanism for more easily balancing the bed. The extensions 173 comprise part of an integral frame including the plate member 126 and members 171 connecting them and secured thereto by welding. The plate 126 and the extensions 173 are secured, respectively, to angle members 170 and 172 extending across the width of the bed, and the angle members provide means for removably securing the unitary frame to the bed through the medium of bolts 174 extending through the end wall 53 of the bed and penetrating the angles which are held in place by nuts 175 drawn up tightly against lock washers 176. The extensions 173 are provided with jaws 177 between which the ends of the chains 163 are received and pivotally secured by pins 178 held in place by washers 179 and cotters 181, and it will be seen that as the bed is lowered the full resistance of the combined spring units 150 will be encountered and the weight of the bed thereby balanced for easy operation. The springs 150 are adjusted to the tension proper to balance the bed at the time of assembly.

A seat back 182, resting upon the flange 110 of the plate 126, is secured to and moves with the bed 50, while the seat cushion 183 is fixed with respect thereto and remains stationary. A person wishing to lower the bed merely grasps the handle 101 and pulls in a downward direction to release the ratchet mechanism 111 and plungers 74 through the medium of eccentric 84 and, pulling in the same general direction, lowers the bed to a position where the mattress-retaining frame 58 may be swung in position automatically to engage the recess 67 as the bed reaches its final position of rest upon the molding 60 rigidly secured to the partition 35 to be engaged by and support the free end of the bed when lowered.

When it is desired to close the bed, the retaining frame 58 is released from engagement with the recess 67 and placed in position to hold the bedding 54 as the bed is swung or given sufficient impetus to swing to a position where the teeth 113 on ratch 112 will be engaged by the safety ratchet 114 positively to prevent the bed unintentionally being lowered before the train attendant makes up the compartment and fully closes the bed, or the occupant of the compartment again lowers it. Ordinarily, if the person operating the bed raises it at all after releasing the frame 58, the impetus thereby given, with the tension of springs 150, will be sufficient to cause the safety ratchet mechanism operatively to engage. Bed-rest molding 60 is supported by an angle member 65 underlying and concealed by the molding and securely fastened to the partition 35 by screws 55, and the bed in its lowered position is supported only by pivots 51, operating in ball bearings 25, and molding 60. The seat back 182 and cushion 183, overlapping when the bed is lowered, do not offer any support thereto. When operating the bed, the bay space 48 provided by curtain 46 may be utilized to advantage by opening the door 37, thereby affording more space for greater freedom of movement. The seat cushion 183 extends across the full width of the compartment between and supported from aisle partition 12 and side wall 36, but the seat back 182 stops short of the aisle partition for a purpose hereinafter referred to and is provided with foldable arm rests 184 which may be lowered for the convenience of the occupant, and, should they be allowed to remain extended when the bed 50 is lowered, they will automatically be folded upon striking the seat cushion 183. A bed light 185, mounted upon the dividing wall 72, is provided for the convenience of the occupant and, when the bed 50 is lowered, may be operated by a switch 186. The bed and all operating accessories are located entirely within the confines of partition 35. It is to be noted that the bed 50 is foldable endwise longitudinally of the car so that when open for occupancy it is disposed alongside of window 45 and, when closed, the folding seat operable therewith is so disposed that the occupant thereof sits by and may have an uninterrupted view through the window. A blind 100, which may be of any type, excludes the light from window 45 when desired.

A washstand 187 is also foldable into the partition 35, but it will be apparent that while the bed 50 is openable into one compartment the washstand in the same partition therewith opens into the next adjacent compartment, so that in the same compartment the bed and washstand are in opposite walls. The folding washstand comprises a receptacle 188 whose outer surface conforms to the contour and finish of the wall of the compartment in which it is hinged at 189, having an operating handle 191, and in which the washbasin 192 is supported by flanges 193 resting upon and secured to the walls 194 of the receptacle. The basin and top surface flange are of white metal and are comprised of separate members secured together, the surface 193 having a rolled edge 195 overhanging the basin 192 about its upper, inner perimeter, providing a smooth finish to prevent injury to a user. The basin is bowl-shaped and is provided with a spout portion 196 through which it is automatically emptied as the basin is closed. The receptacle 188 is lined with zinc 197, as is the recess 198 in the partition 35 accommodating the washbasin, and in the lower portion of which is fitted a drain 199 into which the basin empties and which has a drain pipe 201 provided with a trap 206 and extending to the exterior of the car. A cover plate 202 conceals the plumbing, consisting of hot and cold water pipes 200 and 203 connected to the regular pressure water system used on modern sleeping cars, from the view of the person using the washstand, and only the combination faucet 204 is exposed.

The washbasin is provided with counterweights 205, one at each side, secured to the inner sides of side walls 194 of the receptacle 188 by screws or otherwise, and serve to balance the weight of the washstand—causing the surface 193, when in the closed position, to bear against a complemental surface 207 in the recess 198. When open, the washbasin is supported in a horiontal position by stops 208 attached to the surface 207 at opposite sides of the basin in position to engage the counterweights 205 at their end portions 209 to prevent the washstand 187 from further pivoting about the hinge point 189 after the stops are engaged. The washstand is opened for use by merely grasping the handle 191 and pulling the basin to a horizontal position where it may be filled with water drawn from the faucet 204. After use, the washstand is pushed to its vertical, closed position where it empties into the drain 199 and is held by weights 205. An inspection and maintenance door 210 is pro-

vided in the wall of partition 35 beneath the washstand 187 for examination of the plumbing equipment.

A medicine cabinet 211 is disposed in the partition 35 immediately above the washstand 187 on the same side of the partition and in the same compartment therewith. The cabinet contains shelves 212 and is closed by a hinged door 213 having a mirror 214 on the exposed face thereof. Tubular bracket lights 215, attached to partition 35 upon opposite sides of the medicine cabinet mirror, provide illumination. A used razor blade slot 216 for disposal of old blades and an electrical outlet 217 for electrically-operated toilet devices are arranged in the side wall 36 adjacent the medicine cabinet 211 for the convenience of a person using the mirror 214. An extended mirror 20 on the inner side of sliding door 37 supplements the medicine cabinet mirror 214. A clothes closet or wardrobe 218 for the accommodation of the compartment occupant's personal belongings is also disposed in partition 35 alongside of the washstand 187 and medicine cabinet 211 and is closed by a hinged door 219.

The panel 70 of the partition 35 into which the bed 50 is received and the dividing wall 72 extend from approximately the pivotal end of the bed to the ceiling, and the panel 30 through which the washstand, cabinet 211 and the wardrobe open extends from the floor to the top of the wardrobe and medicine cabinet so that, adjacent the floor, panel 30, only, separates adjoining compartments, and, at the ceiling, panel 70 and wall 72 divides them. The top of the medicine cabinet and wardrobe is utilized for the stowage of baggage, and a shelf 221, on a level therewith and extending from aisle partition 12 to the side wall 36, affords ample accommodation for all necessary luggage and, if desired, the space 222 beneath the seat 183 may also be used for this purpose. The panel 70 is provided with a recess 223 above the seat back 182 between the aisle partition 12 and the bed—affording a small shelf 224 accommodating a carafe 225 and a drinking glass 226.

In addition to the general toilet 17 at the end of the car, an individual, concealed toilet is provided for each compartment. A corner seat 227 covers a hopper 228 and provides additional seating accommodation. The seat 227 is supported upon a stand 229 resting upon the floor of the compartment and extending from the aisle partition 12 outwardly and about the hopper to the face 30 of the partition 35 and fully enclosing the hopper. The hopper 228 is provided with a seat 231 formed as a part of the stand 229, and a cover 232 hinged at 233 upon the stand, conceals the hopper from view when the seat 227 is swung from its normal position of rest upon the cover, as presently will appear. It will be seen that the seat 227 comes within the plan area of the bed 50 when the bed is lowered and supported upon the molding 60, and in order to provide clearance therefor, the seat is hinged at 234 to the stand 229 so that it may be swung to a position of rest upon the floor, as shown in Figs. 10 and 13, when it is desired to lower the bed. A handle 235 on the seat 227 provides for easy operation, and a spring 230, tending to urge the seat to its position of rest covering the hopper, relieves a person operating it of the greater part of the weight of the seat and makes for still greater ease in the operation thereof and prevents vibration and chattering of the seat. Resilient bumpers 236 normally support the seat upon the hopper cover 232 and cushion the closing movement thereof. During the day the hopper 228 is available for use by merely swinging the seat 227 to its nighttime position, but at night it is of course necessary first to raise the bed 50 out of the way since, while the bed is not supported upon the seat 227 or hopper stand, it partially overlaps the hopper so that it is necessary to remove it before the hinged cover 232 may be raised to expose the hopper. It is unnecessary fully to close the bed when it is desired to uncover the hopper, but it may merely be closed to the extent of causing the safety ratchet mechanism operatively to engage to avoid any possibility of mishap. A basket 237 is secured upon that side of the hopper stand 229 adjacent the washstand 187 for the reception of soiled linen.

Beneath the seat 183 a shoe box 238 is installed for receiving shoes to be cleaned by the car attendant. A hinged door 239 opens into the box from the compartment and may be fastened by means of a lock 240, while the attendant has access to the box from the aisle by means of a hinged door 241 opening through the aisle partition 12.

Overhead lights 242 provide general illumination for the individual compartments. Coat hooks 243 are provided on the aisle partition 12 and, in order that a long coat may be hung thereon without rumpling, the seat back cushion 182 is stopped short of the aisle partition to leave a space 244.

The compartments are ventilated individually by means of the usual air conditioning system installed at the end of the car in the roof zone, not shown, but having circulating connection with the compartments upon opposite sides of the aisle through the medium of the central overhead duct 245 and recirculating air outlets 246 in the compartment doors 34 communicating through the aisle 11 with a recirculating air inlet grille in the passageway ceiling at the air conditioning installation. Fresh and recirculating air, conditioned by the air conditioning system, passes through the duct 245 to the various compartments by means of branch connections 247 and is diffused and distributed therein through the medium of outlets 249 extending the full length of the compartments between wall 72 and the face 70 of the opposite partition 35, as best shown in Fig. 4. The outlets from the duct 245 to the branches 247 are of much smaller overall dimension than the outlets 249 to the compartments, but the outlets 249 comprise plates finely perforated throughout their area, as by holes 250, whereas the outlets from the duct are totally open, so that the total combined area of the openings in the outlets 249 is less than that of the duct outlets, whereby slight pressure is built up in the branches 247 causing them to act as diffusing chambers distributing the air to the compartment throughout the length of outlets 249 without noticeable velocity. The perforated outlet plates 249 are removably mounted for cleaning purposes and at their upper edge are supported in ceiling molding 251 and at their lower side rest on molding 252, and held in place by means of a key 253 taking a member 254 secured to the aisle partition 12 and protruding through the outlet plate 249 at the mid-portion thereof. Removal of the plate is facilitated by use of a handhold 255 secured thereto near the key connection.

To remove smoke and vitiated air from the compartments, the car is provided with an ex-

haust ventilating system consisting of an exhaust blower disposed at the end of the car opposite from that in which the air conditioning equipment is installed—discharging to the atmosphere and connected with the individual compartments on each side of the central aisle by separate ducts **256** extending the length of the passenger space above the duct **245** adjacent the respective aisle partitions in position to connect with vertical branch ducts **257** disposed at each compartment. The duct **257** connects with a horizontal duct **258** extending immediately beneath the baggage shelf **221** within the partition **35** in the uppermost part of the wardrobe **218** and connected with the compartment by means of an inlet **259** opening through the bottom of the hollow baggage shelf. The inlet **259** is controllable and may be opened and closed at the will of the occupant of the compartment. The compartments are heated by the usual means disposed adjacent the floor at the side walls and covered by a grille **260** but arranged to be controlled individually by the passengers in the various compartments. The control is hand-operated and comprises a handle **261** arranged, for convenience, on the face **70** of partition **35** in the space **244** between the seat **182** and the aisle partition **12** and connected with a heat control valve.

From the foregoing, it will be seen that there has been provided a car having a plurality of permanently independent rooms disposed upon opposite sides of a central aisle, each provided with complete facilities for day and night travel and in which at least the major accessories are foldable into the walls thereof and operable with only slight effort on the part of the occupant—making the entire room space available for lounging or dressing and preparing the toilet, and in which complete toilet facilities, a wardrobe and other conveniences are at the disposal of the occupant and to which he has access day or night. It is to be noted that each of the private rooms occupies no more space than is required for the ordinary open section, having upper and lower berths, and, as actually constructed, eighteen individual rooms are incorporated in a car, since the ladies' and gentlemen's rest rooms ordinarily used at opposite ends of a car are eliminated and the space utilized for additional accommodations.

What is claimed is:

1. In a vehicle having a room, a full length bed in said room foldable endwise into a wall thereof, bedding in the bed, means for locking the bed in said wall, means for releasing the locking means and lowering said bed, means for retaining the bed in lowered position, said means serving to retain the bedding when the bed is in raised position, and means operating simultaneously with and subsequent to said releasing means to prevent lowering of the bed without continued operation of the releasing means.

2. In a vehicle having a room, a full length bed in the room foldable endwise into a wall thereof, bedding in said bed, a vertically slidable headboard preventing escape of said bedding in the raised position of the bed, means for locking the bed in said wall, means for releasing the locking means and lowering said bed, and means for retaining the bed in lowered position, said means serving to prevent sagging of the bedding in the raised position of the bed.

3. In a vehicle having side walls, a plurality of partitions spaced from said walls and forming a central aisle, a plurality of partitions at an angle to and extending from said aisle partitions to the respective side walls forming a plurality of rooms at each side of the aisle, doorways in the aisle partitions at each room, doors closing said doorways, curtains at the doorways, a bed in each room foldable endwise longitudinally of the room into said second-named partitions, bedding in said beds, means for locking said beds in said partitions, means for releasing said locking means and lowering said beds, means for retaining said beds in lowered position, said means serving to retain said bedding in the bed when in the raised position, means operating simultaneously with and subsequent to said releasing means to prevent lowering of the bed without continued operation of the releasing means, a folding washstand in each room disposed also in said second-named partitions, a cabinet in said partitions, a wardrobe in said partitions, a hopper in said rooms enclosed by a removable seat, and means for ventilating the individual rooms.

4. A vehicle having a plurality of rooms, said rooms having a bed of fixed length and toilet facilities foldable flush within walls oppositely disposed in the respective rooms and separating adjoining rooms.

5. A vehicle having a central aisle, a plurality of adjoining rooms upon each side of said aisle, each room having a bed of fixed length foldable endwise longitudinally of the vehicle flush within a wall thereof, and a washstand foldable flush within an opposite wall, said walls separating adjoining rooms.

6. In a vehicle having a plurality of permanently independent rooms, partitions separating adjoining rooms, a bed of fixed length foldable flush within each partition and opening endwise into a room, and a washstand foldable flush within each partition and opening into a room.

7. In a vehicle having a plurality of permanently independent rooms upon opposite sides of a central aisle defined by spaced partitions, fixed partitions separating adjoining rooms, a bed of fixed length foldable endwise within each of said fixed partitions and opening into a room, and a washstand foldable flush within each of said fixed partitions and opening into a room.

8. In a vehicle having a plurality of permanently independent rooms separated longitudinally of the vehicle by fixed partitions, a bed of fixed length foldable longitudinally within one side of each partition and opening into a room, and a washstand foldable flush within the opposite side of each partition and opening into an adjoining room.

9. In a vehicle having a plurality of permanently independent rooms upon opposite sides of a central aisle defined by spaced partitions, fixed partitions separating said rooms longitudinally of the vehicle, a bed of fixed length, foldable longitudinally within one side of each of said fixed partitions and opening into a room, and a washstand foldable flush within the opposite side of each partition and opening into an adjoining room.

10. In a vehicle having a plurality of permanently independent rooms separated longitudinally of the vehicle by fixed partitions, a bed of fixed length foldable endwise flush within one side of each partition, and toilet facilities foldable flush within one side of each of said fixed partitions, said beds and toilet facilities opening into the respective rooms from opposite partitions.

11. In a vehicle having a plurality of permanently independent rooms upon opposite sides of a central aisle defined by spaced partitions, fixed partitions separating said rooms longitudinally of the vehicle, a bed of fixed length foldable endwise flush within one side of each of said fixed partitions, and toilet facilities foldable flush within one side of each of said fixed partitions, said beds and toilet facilities opening in the respective rooms from opposite partitions.

12. In a vehicle having a plurality of rooms separated by fixed partitions, said partitions each containing a bed of fixed length foldable endwise therein, a wardrobe having a hinged door, a washstand foldable flush therein, and a medicine cabinet above said washstand all for the respective rooms.

13. In a vehicle having a room, a bed of fixed length foldable endwise within a wall of the room, and concealed toilet facilities in said room including a folding washstand enclosed within a wall and an enclosed hopper having a hingedly-mounted cover movable to provide clearance whereby the bed may be opened.

14. In a vehicle having a plurality of rooms upon opposite sides of an aisle, a bed of fixed length in each room foldable endwise into a wall, and concealed toilet facilities in each room including a folding washstand in its closed position enclosed within a wall and an enclosed hopper having a hingedly-mounted cover movable to provide clearance whereby the bed may be opened.

15. In a vehicle having partitions providing a plurality of rooms, beds of fixed length in the respective rooms foldable endwise into said partitions, folding washstands enclosed in said partitions in the respective rooms, and enclosed hoppers in the respective rooms having hingedly-mounted covers movable to provide clearance whereby the beds may be opened.

16. In a vehicle having a plurality of rooms separated by fixed partitions, said partitions each containing a bed of fixed length foldable endwise therein, toilet facilities enclosed in the respective partitions including a folding washstand, a medicine cabinet above said washstand, and a wardrobe, and an enclosed hopper in each room having a hingedly-mounted cover movable to provide clearance whereby the bed may be opened.

17. In a vehicle having a plurality of rooms, a bed of fixed length foldable endwise within a wall of each room, and concealed toilet facilities in each room including a washstand enclosed within a wall and an enclosed hopper in each room covered by said bed in the open position of the bed.

18. In a vehicle having a room, a bed of fixed length foldable endwise within a wall of the room, and concealed toilet facilities in said room including a folding washstand enclosed within a wall and an enclosed hopper covered by said bed in the open position of the bed.

19. In a vehicle having side walls, a plurality of partitions spaced from said walls and forming a central aisle, a plurality of partitions extending from said aisle partitions to the respective side walls forming a plurality of rooms at opposite sides of the aisle, doorways in the aisle partitions at each room, sliding doors for said doorways, a bed in each room foldable endwise within a partition, bedding in said beds, means for locking the beds in said partitions, means for releasing said locking means to lower the beds, means for retaining said beds in lowered position, and means operating subsequently to said releasing means to prevent lowering of the bed without repeated operation of the releasing means.

20. A vehicle having walls defining a room, a bed of fixed length foldable endwise within one of said walls disposed transversely of said vehicle and adapted to be extended along a wall disposed longitudinally of said vehicle and having a window opening, and toilet facilities extensible from a transverse wall of said room oppositely disposed with respect to said first wall and adapted to be folded into said second named transverse wall to provide clearance whereby said bed may be folded or extended.

21. A vehicle having a plurality of rooms, each of said rooms having a bed of fixed length foldable endwise within a wall of said room disposed transversely of said vehicle and adapted to be extended along a wall disposed longitudinally of said vehicle and having a window opening, and toilet facilities extensible from a transverse wall of said room oppositely disposed with respect to said first wall and adapted to be folded into said second named transverse wall to provide clearance whereby said bed may be folded or extended.

22. In a vehicle having a plurality of permanently independent rooms, a bed of fixed length foldable longitudinally within a wall of each room, and concealed toilet facilities in each room comprising a washstand enclosed within a wall and an enclosed hopper disposed in the room having an integral seat and back hingedly mounted and movable to an inverted horizontal position to expose said hopper before said bed is opened.

23. In a vehicle having a plurality of permanently independent rooms upon opposite sides of a central aisle, a bed of fixed length in each room foldable longitudinally within a wall, and concealed toilet facilities in each room comprising a washstand enclosed within a wall and an enclosed hopper having an integral seat and back hingedly mounted and movable to an inverted horizontal position to expose said hopper before said bed is opened.

24. In a vehicle having partitions providing a plurality of rooms, a bed of fixed length in each room extending longitudinally of the vehicle and full length of the respective rooms and foldable endwise within a partition, a washstand in each room enclosed within the partition opposite said bed, and an enclosed hopper in each room having an integral seat and back hingedly mounted and movable to an inverted horizontal position to expose said hopper before said bed is opened.

25. In a vehicle having a plurality of rooms separated by fixed partitions, said partitions each containing a bed of fixed length foldable endwise therein, a wardrobe, a washstand enclosed therein, and a medicine cabinet above said washstand all for the respective rooms, and an enclosed hopper in each room having an integral seat and back hingedly mounted and movable to a horizontal position to expose said hopper before said bed is opened.

26. A vehicle, a room in the vehicle, a bed of fixed length in the room foldable endwise flush within a wall, concealed means locking the bed in the wall, releasing means therefor, other locking means preventing lowering of the bed, releasing means for said other locking means, a connection between said releasing means whereby the second lock is retained in released position while the first releasing means is held in releasing po-

sition, and means comprising springs balancing the weight of the bed.

27. A vehicle having longitudinal and transverse walls defining a room, a window in one of said longitudinal walls, a rigid bed hinged to a transverse wall and foldable endwise longitudinally of the room, a folding seat back fixed to and operable with said bed and disposed alongside of said window, said bed being connected to said seat back so as to be opened when the seat back is folded and so that said seat back is moved to operative position when the bed is closed.

28. In a vehicle having a plurality of rooms, a bed of fixed length foldable endwise within a wall of each room, and concealed toilet facilities in each room including a washstand enclosed within a wall and an enclosed hopper in each room having a hingedly-mounted seat movable to a position to expose said hopper and provide clearance whereby the bed may be opened.

29. A vehicle, a room in the vehicle having a lengthwise wall provided with a window, a bed having a fixed length substantially equal to the length of the room foldable endwise into a wall of the room disposed transversely of the vehicle, concealed means locking the bed in the wall, means for releasing said locking means to lower the bed along said lengthwise wall, and means balancing the weight of the bed during the lowering operation and during the raising thereof.

30. A vehicle, a room in the vehicle having a lengthwise wall provided with a window, a bed having a fixed length substantially equal to the length of the room foldable endwise into a wall of the room disposed transversely of the vehicle, bedding in the bed, means retaining said bedding in the folded position of the bed, means for locking the bed in said wall, means for releasing the locking means to lower the bed along said lengthwise wall, and means for retaining the bed in lowered position.

31. A vehicle, a room in the vehicle having a lengthwise wall provided with a window, a bed having a fixed length substantially equal to the length of the room foldable endwise into a wall of the room disposed transversely of the vehicle, bedding in the bed, means retaining said bedding in the folded position of the bed, a vertically slidable headboard preventing escape of said bedding in the raised position of the bed, means for locking the bed in said wall, means for releasing the locking means to lower said bed along said lengthwise wall, and means for retaining the bed in lowered position.

32. A vehicle having a partition, a room in the vehicle having a wall comprised by said partition, a full length folding bed in the room, said bed comprising a bedding-supporting receptacle having rigid marginal walls one of which is spaced from said partition to provide a passenger standing space, bedding in said receptacle substantially to the level of said marginal walls, and means for securing said bed in folded position, said named marginal wall being of reduced height and having a cushioned edge substantially to the height of the other marginal walls.

33. In a vehicle having a room, a bed foldable endwise into a wall of the room and having a fixed length substantially equal to the distance from said wall to the opposite wall of the room, and concealed toilet facilities in the room including a washstand foldable into said opposite wall to provide clearance for folding and opening movements of the bed and an enclosed hopper covered by the bed when the bed is open.

34. In a vehicle having a room, a bed adapted to be raised to be folded endwise into a wall of the room and having a fixed length substantially equal to the distance from said wall to the opposite wall of the room, and concealed toilet facilities in the room including a washstand foldable into said opposite wall to provide clearance for folding and opening movements of the bed and an enclosed hopper having a removable covering, said hopper being covered by the bed when the bed is open and said covering being removable to expose the hopper only when the bed is raised.

DAVID A. CRAWFORD.

CERTIFICATE OF CORRECTION.

Patent No. 2,147,011. February 14, 1939.

DAVID A. CRAWFORD.

It is hereby certified that error appears in the printed specification of the above numbered patent requiring correction as follows: Page 7, first column, line 9, claim 11, for the word "in" read into; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 11th day of April, A. D. 1939.

Henry Van Arsdale

(Seal) Acting Commissioner of Patents.