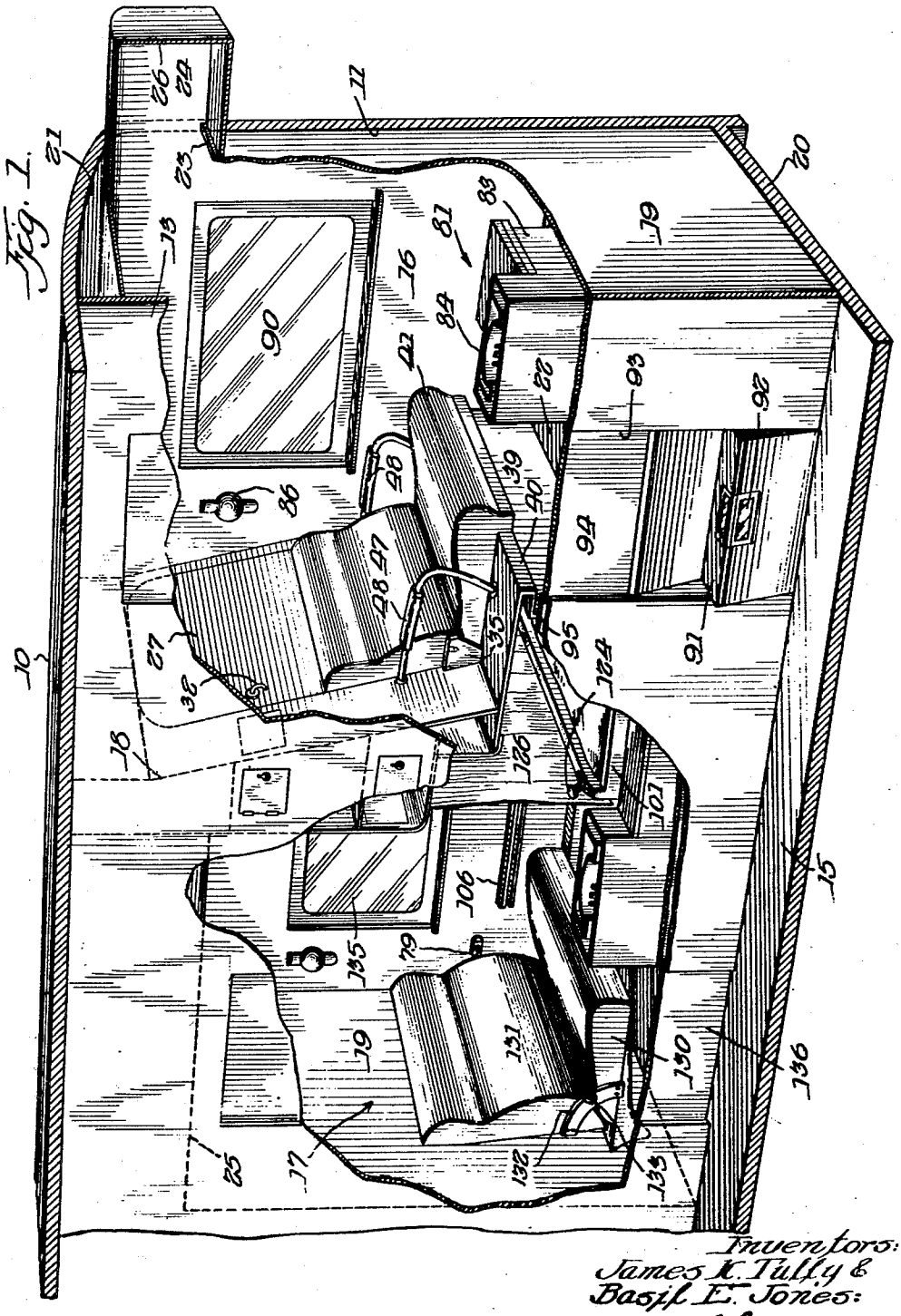
Dec. 16, 1947. B. E. JONES ET AL 2,432,572

RAILWAY SLEEPING CAR BED

Original Filed March 22, 1941 6 Sheets-Sheet 1

Fig. 1.



Inventors:
James K. Tully &
Basil E. Jones:
By Oscar Hochberg. Atty.

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RAILWAY SLEEPING CAR BED

Original Filed March 22, 1941 6 Sheets-Sheet 2

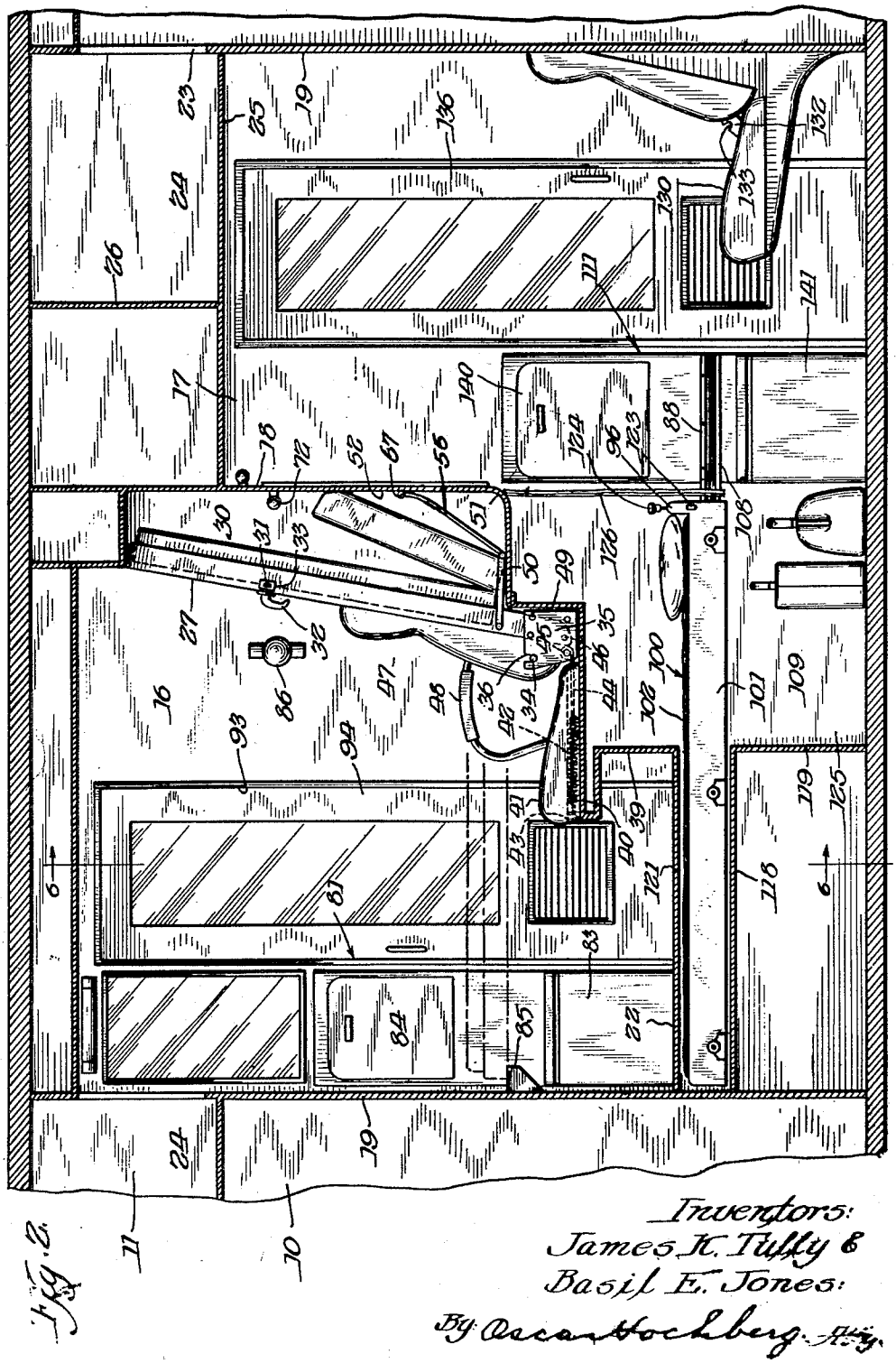


Fig. 2.

Inventors:
James K. Tully &
Basil E. Jones:
By Oscar Hochberg. Atty.

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RAILWAY SLEEPING CAR BED

Original Filed March 22, 1941 6 Sheets-Sheet 3

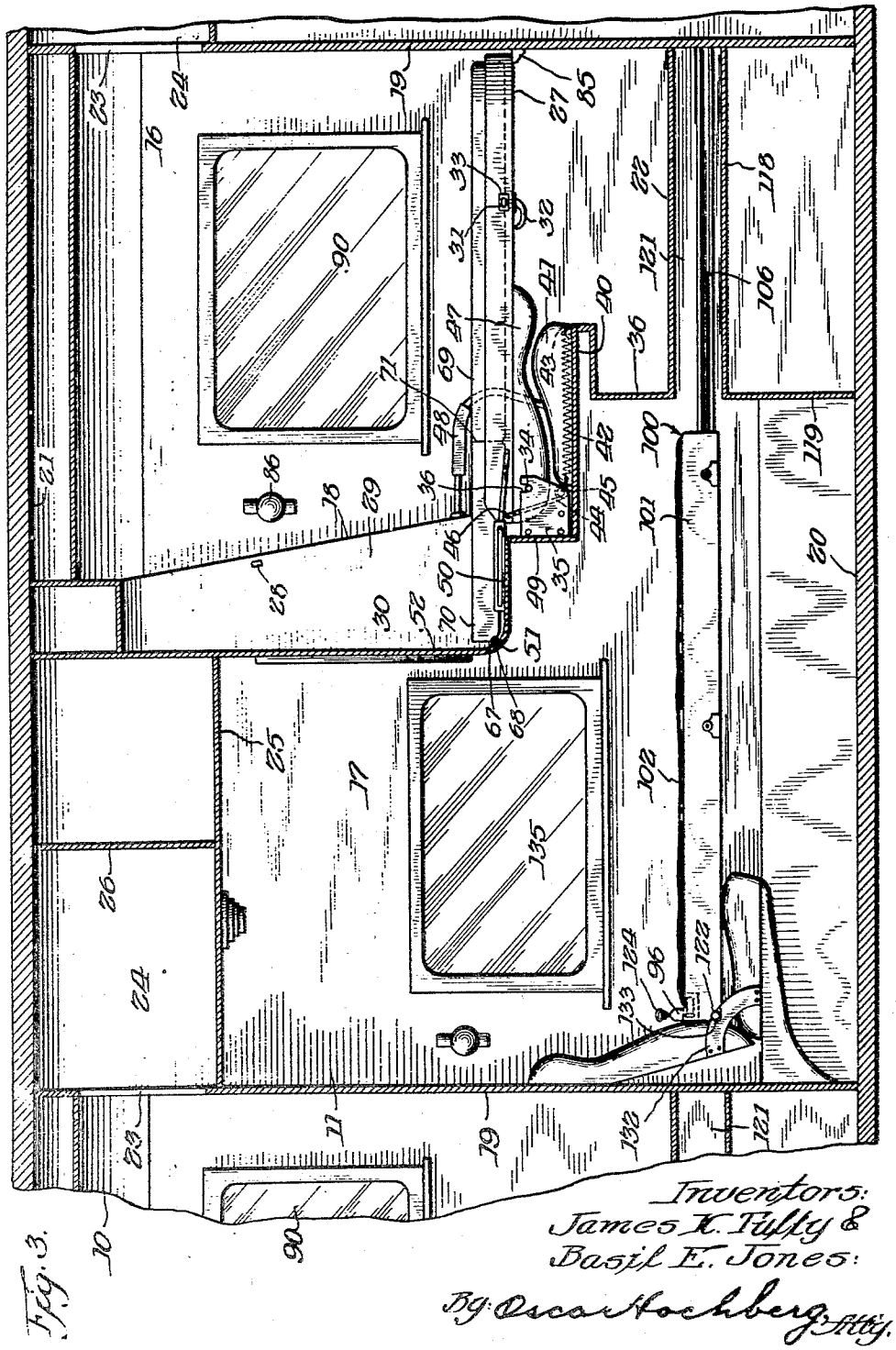


Fig. 3.

Inventors:
James K. Tuffy &
Basil E. Jones:
By Oscar Hochberg, Atty.

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RAILWAY SLEEPING CAR BED

Original Filed March 22, 1941 6 Sheets-Sheet 4

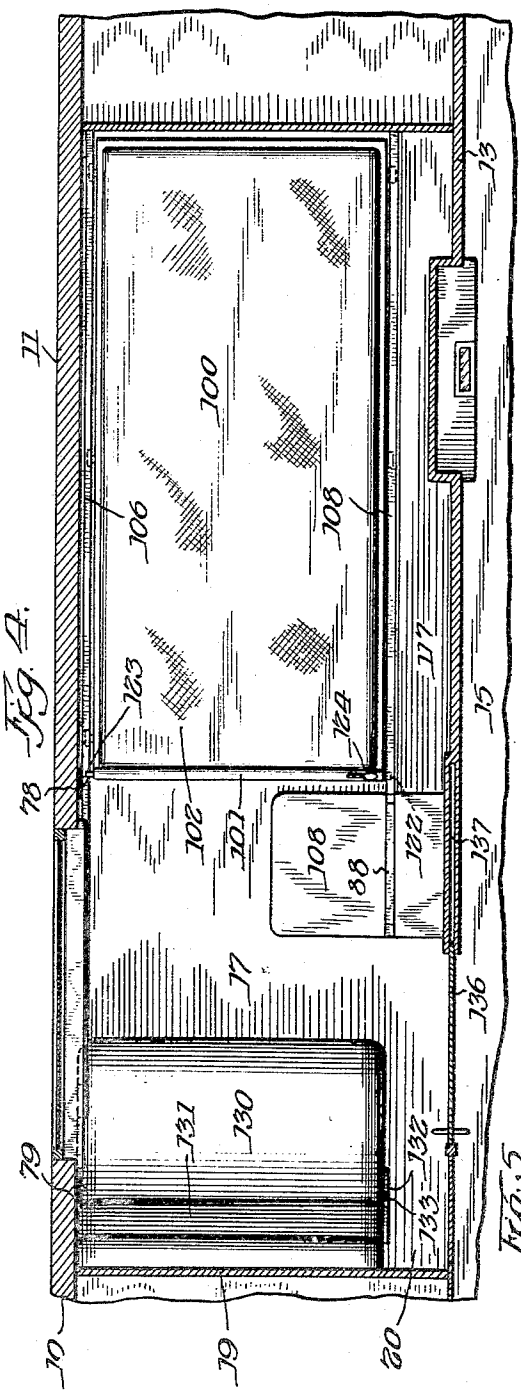


Fig. 4.

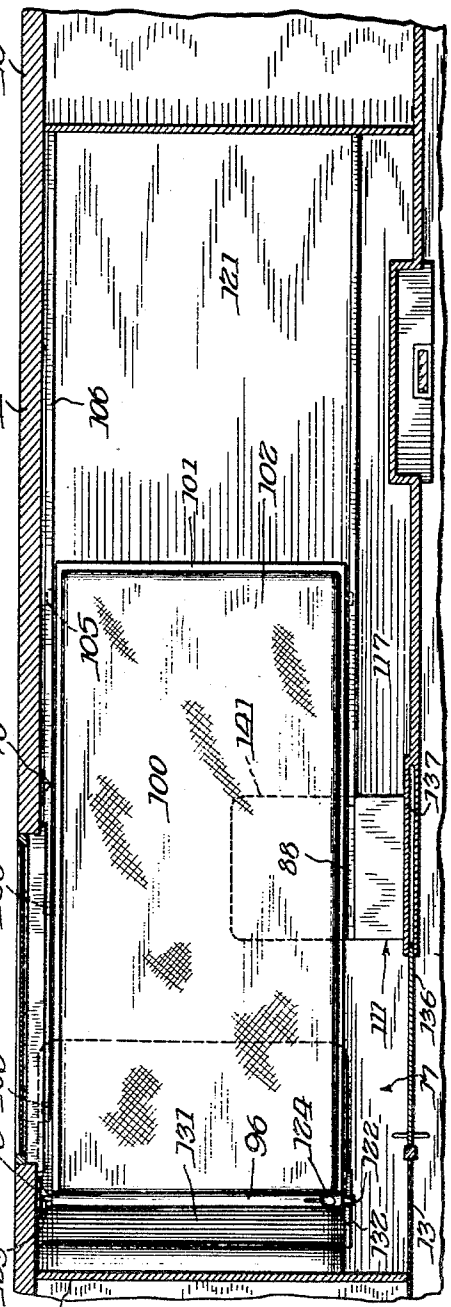


Fig. 5.

Inventors:
James K. Tully &
Basil E. Jones:
By Oscar Hochberg: Atty.

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RAILWAY SLEEPING CAR BED

Original Filed March 22, 1941 6 Sheets-Sheet 5

Fig. 6.

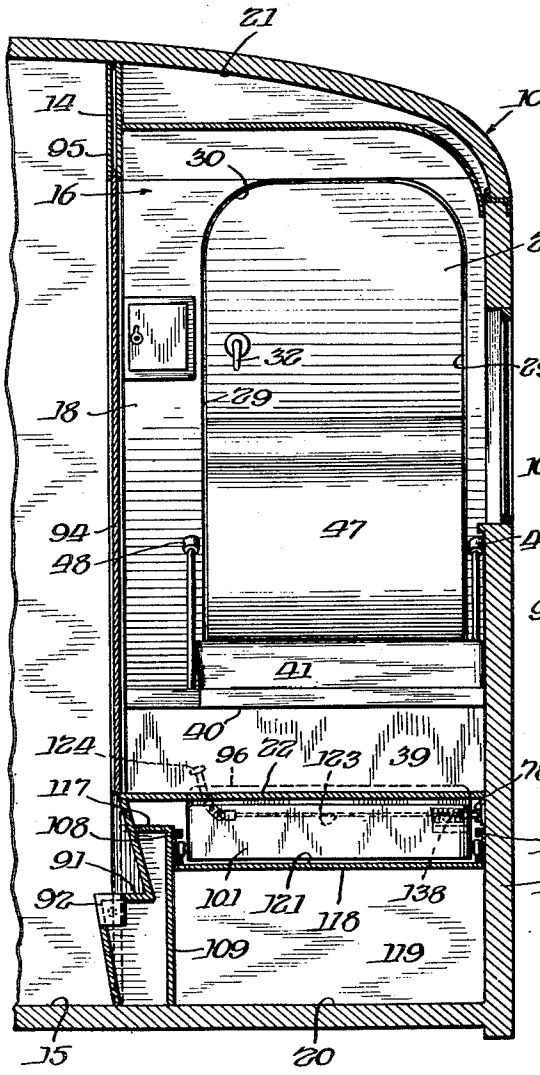
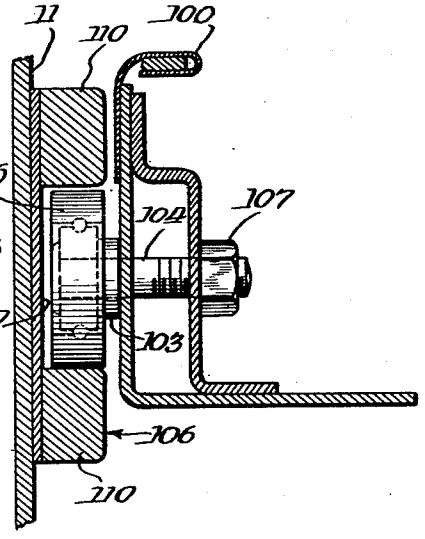


Fig. 7



Inventors:
James K. Tully &
Basil E. Jones:
By: Oscar Hochberg. Atty.

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RAILWAY SLEEPING CAR BED

Original Filed March 22, 1941 6 Sheets-Sheet 6

Fig. 8.

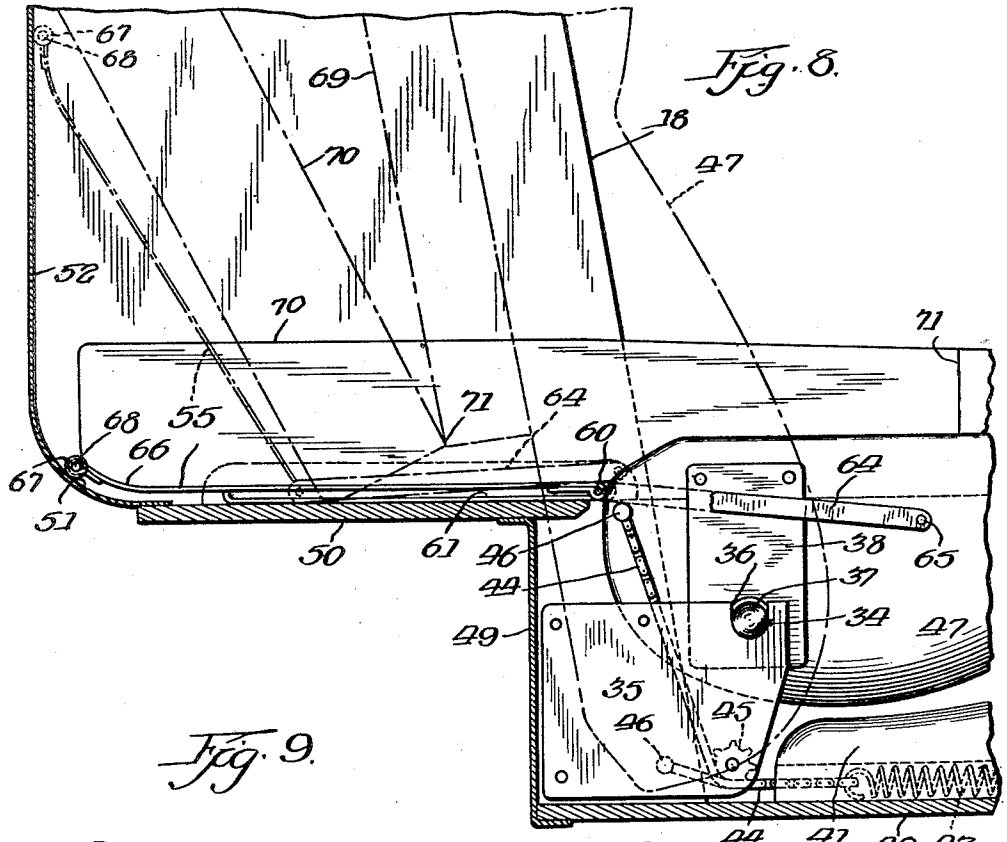
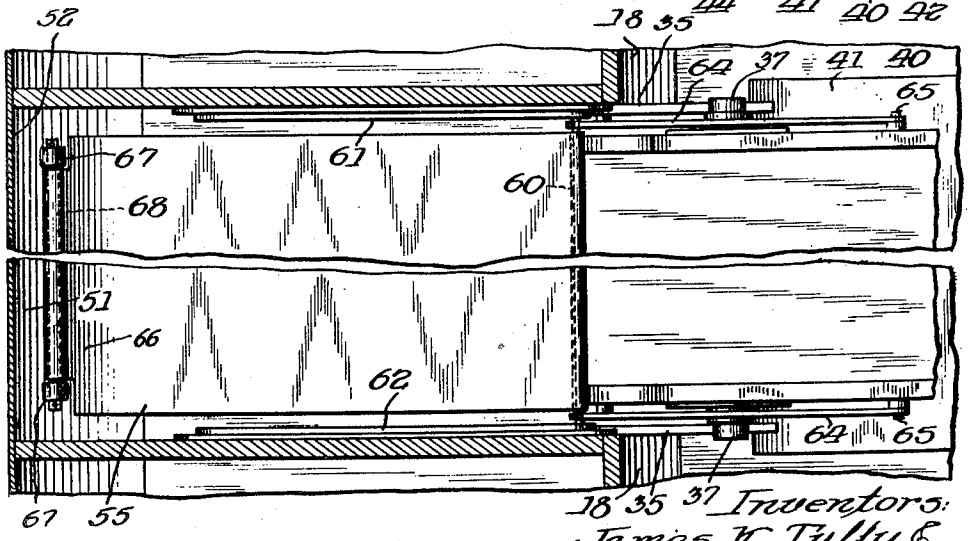


Fig. 9.



Inventors:
James K. Tully &
Basil E. Jones:
By: Oscar Hoelberg. Atty.

Patented Dec. 16, 1947 2,432,572

UNITED STATES PATENT OFFICE

2,432,572

RAILWAY SLEEPING CAR BED

Basil E. Jones, Flossmoor, Ill., and James K. Tully, United States Army, assignors to The Pullman Company, Chicago, Ill., a corporation of Illinois

Original application March 22, 1941, Serial No. 384,681. Divided and this application February 7, 1944, Serial No. 521,487

5 Claims. (Cl. 5—136)

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This invention relates to railway sleeping cars and has for its primary object the provision of a car having permanently separate and independent compartments at upper and lower levels upon respectively opposite sides of a central longitudinal aisle with each compartment having complete toilet facilities and including beds adapted to be disposed out of the area of the normally usable space of the respective compartments with all of the beds at one level being foldable endwise into a wall and those at the other level slidable endwise into a recess to clear the respectively usable areas, whereby such compartments are convertible for either day or night use.

The invention contemplates a bed foldable endwise into a wall of a compartment, but of less length than the compartment, and having an extension articulated therewith movable from a folded position, in the closed position of the bed, to a horizontal mattress-supporting position in the open or nighttime position of the bed. A feature of the invention is the association of a seat and folding backrest with the bed, with the backrest movable to inoperative position as the bed is opened and having balancing mechanism adapted to provide for easy operation of the folding bed as it is manipulated from one extreme position to the other.

The foregoing and other objects, which will become apparent as the description proceeds, are attained by the construction and arrangement more fully hereinafter to be described and shown in the accompanying drawings, wherein

Fig. 1 is a general perspective view of a portion of a railway car having portions broken away better to reveal the compartments at upper and lower levels constructed and arranged in accordance with this invention;

Fig. 2 is a longitudinal sectional view showing compartments at an upper and a lower level, each made up for daytime occupancy;

Fig. 3 is also a longitudinal sectional view showing the compartments at upper and lower levels made up for nighttime occupancy with the beds each in the open position;

Fig. 4 is a longitudinal plan sectional view taken wholly beneath the level of the upper compartment and through the bed recess for the lower compartment showing the disposition of the bed in its receded position;

Fig. 5 is a similar view showing the bed in fully extended position;

Fig. 6 is a cross sectional view taken on the line 6—6 of Fig. 2, through an upper level compartment, showing the folding bed in its closed

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upright position with the seat in the daytime occupancy position;

Fig. 7 is a fragmentary detail view of the antifriction roller track arrangement for the sliding bed;

Fig. 8 is an enlarged fragmentary detail view illustrating the bed and folding seat pivot arrangement for the upper level compartment and showing the bed balancing mechanism together with the bed extension for supporting the mattress; and

Fig. 9 is an enlarged fragmentary plan view of the articulated bed extension for the folding bed.

This application is a division of our copending application Serial No. 384,681, filed March 22, 1941, for Railway sleeping car.

In the drawings 10 represents a railway car having sidewalls 11 and 12 and longitudinal partitions 13 and 14 defining a central aisle 15. Between the partitions 13 and 14 and the respective side walls 11 and 12 are compartments 16 and 17 at upper and lower levels, respectively, and disposed at opposite sides of the central aisle. The upper and lower compartments at each side of the aisle are separated by partitions 18 and 19 at opposite ends of the various compartments and extending from the respective side walls to the respectively associated aisle partitions. The partitions 19 extend continuously from the floor 20 of the car 10 to the roof framing 21, as best shown in Figs. 2 and 3, and the partitions 18 extend from the roof framing to floor 22 of upper compartments 16. The partitions 19 are each disposed in a single plane and continuous except for opening 23 which provides access to luggage compartment 24 provided for each upper compartment and which is disposed over the ceiling 25 of lower compartment 17. Rear wall 26 defines the depth of the luggage compartment.

Partitions 18 as best shown in Figs. 2 and 3 are of substantial depth for a purpose hereinafter to appear. Each of the compartments 16 is provided with a bed 27 foldable endwise into the respective partitions 18 where it is retained by spring-pressed latches 28 disposed in respectively opposite side walls 29 of bed recess 30 and which are released by mechanism 31 including pushrods operatively associated with operating handle 32 and adapted to push the latches 28 out of engagement with catches 33 on opposite sides of the bed 27 to permit withdrawal of the bed from the recess 30. The bed is hingedly mounted in the partition recess as at 34 by means of a bracket 35 secured in the recess 30, adjacent the lower end thereof, having an upwardly opening slot 36 adapted to co-

operate with trunnion 37 forming part of bracket 38 secured to the bed all as best shown in Fig. 8. The horizontal depth of partition 18 is greater at 39 to provide an overhanging support 40 for seat 41 and the hinge mechanism 36 for the folding bed is disposed substantially at the position of this seat. As best shown in Fig. 3, seat 41 conceals bed-balancing mechanism including springs 42 anchored to the seat support 40 at 43 and having sprocket chains 44 secured to their respectively opposite ends and passing over sprockets 45 pivotally secured to the brackets 35 and then connected to the bed 27 at 46 and at that side of the pivot 34 opposite the free end of the bed to exert a force thereon tending to close the bed, thus facilitating the operation of the bed. Backrest 47 for the seat 41 is fixed to the bed 27 and movable therewith to an inoperative, inverted position as the bed is opened for use and to an upright position for use as the bed is closed. Upholstered fixed armrests 48 extend between and are secured to the partition 18 and the seat support 40 at opposite sides of the seat and backrest 41 and 47 respectively.

The partition 18 is offset at 49 to provide a horizontal shelf 50 having an arcuate portion 51 connecting the shelf with the vertical rear wall 52 of the bed recess and which forms the dividing wall of the lower compartment 17. It will be noted that the hingedly mounted bed 27 does not afford a full length bed but the shelf 50 provides a support for a bed extension 55, foldable into the bed recess 30 and movable automatically with the bed to an operative horizontal position of rest on the shelf 50. As best shown in Figs. 8 and 9, the extension 55 comprises a substantially flat plate having a reinforcing rod 60 extending across its edge next adjacent to the lower edge of the bed 27 and about which the extension plate 55 is wrapped, or folded, and secured. The rod 60 extends beyond the respectively opposite sides of the extension plate to engage flanged track guide members 61 and 62 mounted upon the opposite side walls of bed recess 30 in position to support that end of the extension out of engagement with the shelf 50.

The tracks 61 and 62 are of such length as to permit of the full movement of the extension into and out of the bed recess as the bed is closed or opened. The slidable extension 55 is connected to the bed 27 by means of links 64 disposed at opposite sides of the bed and extension and which are pivotally connected to the rod 60 at the respective ends between the extension and the tracks 61 and 62 and to the bed 27 at each side, as at 65. The opposite or far end of the extension 55 is slightly arcuate, as at 66, and is supported by means of antifriction rollers 67 on the arcuate portion 51 between shelf 50 and dividing wall 52. The rollers 67 are mounted upon a reinforcing rod 68 extending across the free end of the extension and about which it is folded and secured. The extension 55, as the bed 27 is moved from an open to a closed position, is adapted, by means of the rollers 67, to ride up the arcuate portion 51 and the wall 52 to an inclined position in the fully closed condition of the bed, at which time the connecting links 64 allow sufficient space to accommodate a folding mattress between the closed bed and upright extension, as best disclosed in Fig. 8. The bed 27 is adapted to receive a mattress 69 provided with a foldable extension portion 70 hingedly secured thereto at 71 and which, in the open position of the bed, is adapted to provide a full length horizontally flush sleeping surface and, in the closed position of the bed, to fold

up automatically as the extension 55 rides up the wall 52 and be accommodated within the recess 30. Both conditions of the folding bed arrangement are illustrated in Fig. 8 from which the relative positions may readily be ascertained. A light 72 in the bed recess 30 provides illumination for reading when the bed is open, and fixtures 86 on the side and aisle walls provides light for reading in the closed position of the bed.

A combination member 81 is provided in compartment 16 incorporating the toilet facilities for this room, including a covered hopper 83 and a folding washstand 84. The combination member is disposed in that corner of the room away from partition 18 and adjacent to partition 19 and aisle partition 13 and where the enclosed hopper is overlapped by the bed 27 in its open position which is supported at this free end on ledge 85 on the partition 19. A window 90 is disposed in the side wall 11 of the compartment 16 at a level convenient to a person using the seat 41 and alongside of which the bed 27 is disposed when open. A single step 91, having a lighting fixture 92, provides access to the level 22 of the compartment 16 through doorway 93 which may be closed by sliding door 94 receivable in pocket 95 in the aisle partition 13.

As best shown in Figs. 2 and 3, it will be seen that where the upper compartment has a pivotally mounted folding bed the lower compartment is provided with a bed of fixed full length slidably mounted to move from a concealed, inoperative position to an extended position in the compartment for use. The sliding bed 100, for the lower compartment 17, is best shown in its two extreme positions of movement in Figs. 2 and 3 respectively. The bed comprises a bunk or frame 101 in the form of an open top box like receptacle adapted to receive a full length mattress 102 and having rollers 105 secured at intervals along the outer side walls thereof to provide for longitudinal movement of the bed in compartment 17. Mounting trunnions 104 afford bearings for ball or roller bearings for the rollers 105 which are adapted to support the bed for relative sliding movement in tracks provided therefor at opposite sides of the bed. The trunnions 104 comprise headed bolts secured through respective side walls of the bed by means of threaded fastenings 107 with spacing collars 103 maintaining the rollers 105 in proper spaced relation to the side of the bed. A track 106 is mounted upon the side wall 11 for support of the bed on that side and extends continuously the full length of the movement of the bed and therefore supports the bed at this side in both fully open and retracted positions. The bed 100 is adapted to move endwise longitudinally from a fully concealed, retracted or daytime position beneath the floor 22 of the compartment 16 and partition 18 to a fully extended open or nighttime position in the compartment 17. The bed at the wall side is provided with three of the rollers 105—one at each end and one at an intermediate position—so that it is supported over its full length throughout its travel from retracted to extended position and return. The track 106 comprises upper and lower rails 110 on a base plate or web 97, as best shown in Fig. 7, and the rollers 105 are adapted to be disposed between the upper and lower rails for support on the lower rail with the upper rail acting as a guard or cover overlying the rollers. The bed is supported at the opposite side by means of rollers 105, engaging a track 108 which is secured to vertical longitudinally extending

panel 109, providing a support from the car floor 20, and extending continuously across the face of a combination member 111 at the outer side of which it terminates as best shown in Fig. 2. The bed on this side is provided with two of the rollers 105—one at the inner end and one at an intermediate position with the intermediate roller disposed for support in the track on the combination member when the bed is extended. The track 108 is of the same construction as track 106 and extends continuously the length of the panel 109 and across the face of the combination member 111 to accommodate the full travel of the two bed supporting rollers 105 on this side. When the bed is extended both rollers support the bed in the track as in the retracted position of the bed and their disposition in relation to the length of the track and of the bed and its movement is such that once they are entered in the space between the upper and lower rails 110 they do not leave the confines of track 108 and the rollers 105 at both sides of the bed are entered into the tracks 106 and 108 by means of a removable portion 88 in the upper rail 110 on the face of the combination member 111. When the upper rail portion 88 is removed, the bed frame 101 may be assembled with the supporting tracks in the following manner: The bed is disposed at an upward inclination in compartment 17 and the roller 105 at the inner end of the bed on the side adjacent wall 11 is inserted between upper and lower rails 110 of track 106 after which the end roller at the other side of the bed is dropped into track 108 through the space left by removed portion 88 whereupon the bed may be moved to a horizontal position where the remaining rollers on the wall side may be inserted in track 106 and the remaining roller at the other side dropped through the opening in the upper rail and the removable portion reapplied to maintain the relation of the bed in the supporting tracks. It will be noted that the bed frame, or bunk, 101 is not carried at its outside corner from the panel 109 by means of one of the rollers 105, but, instead, is supported by means of a laterally extending bedrest 122 adapted to enter the track 108 on the combination member 111 as the bed is closed to support this corner of the bed in retracted position. The bedrest 122 is adapted also to support the bed in extended position as will hereinafter appear.

The panel 109 is of approximately the same height from the floor as the bed 100 and extends from the partition 19 to the combination member 111 in the lower compartment, and a horizontal member 117 of this same extent closes the space between the top of panel 109 and the aisle partitions 13 and 14, as best shown in Figs. 4, 5 and 6, to prevent anything from the bed from falling into this space. A horizontal member 118 is disposed immediately beneath the bed frame 101 between the respective panels 109 and the car side walls 11 and 12 and extending from the partition 19 to a vertical transverse wall 119, as best shown in Figs. 2 and 3, and which extends from the respective panels 109 to the side walls 11 and 12 and from the members 118 to the car floor 20. This member 118 prevents any part of the bedding from falling into the space 120, which otherwise would be exposed by the withdrawal of the bed 100 from the recess 121 thus formed. The space 125 beneath the bed 100, in its normally closed position, as best shown in Fig. 2, may be utilized for the storage of luggage as may the space on the bed beneath the seat support 40 and shelf 50 when the bed is not in use, if desired. The bed 100, in its retracted position, is concealed by means of a curtain 126 extending between the side wall 11 and aisle partition 13 and which may be withdrawn when the bed is extended for use. While the curtain 126 is indicated as closing this space, any other type of closure might be utilized, such as a rollaway partition or doors or the like.

A seat 130 is provided in compartment 17 adjacent to the partition 19 and having an associated backrest 131 supported against this partition. The seat and backrest may be supported entirely from the partition 19 or from the side wall 11 and aisle wall 13 or the floor 20 or in any manner desired from any one or combination of these elements. A seat end bracket 132 is associated with the seat and backrest at that side away from the side wall 11 and is provided with a slot 133 adapted to receive the bedrest 122 on the bed. The seat end bracket 132 is rigidly mounted and therefore provides a fixed support for the co-operating end of the bed 100 which, by means of the interlocking engagement between the part 122 and the slot 133, is thereby supported in its fully extended position with the bed 100 in overlapping relation to the seat 130. The bracket 132 might form part of an armrest for the seat 130 or be entirely dissociated from the seat so long as its supporting relation, with respect to the bed, is retained. Locking mechanism operable from the same corner of the bed as that upon which the bedrest 122 is mounted is provided for locking the bed in fully extended and retracted positions. The locking mechanism comprises a spring pressed retractable bolt 123 located within the end rail 96 of the bed frame 101 and engageable with locking stops 78 and 79 in the retracted and extended positions of the bed respectively. The locking stops are secured upon the side wall 11 in position to be engaged by the locking bolt 123 as the bed is moved from one position to the other and are each provided with a sloping surface serving to retract the locking bolt automatically as the bed is moved to either extreme position. When the locking bolt passes the point of greatest dimension of the stop it is automatically projected into engagement behind the abutment surface serving as a positive stop to opposing movement of the bed by means of spring 138 associated with the bolt within the end rail 96. The locking stops 78 and 79 are oppositely disposed to present their abutment surfaces in opposed relation to opening and closing movements respectively of the bed. It will be noted that the locking bolt 123 extends within the end rail 96 substantially across the full width of the bed 100 and when it is desired to operate the bed by moving it from one position or the other the bolt may be retracted by means of an operating handle 124 which is located at the same side of the bed with the bedrest 122 so that while the locking mechanism for the bed is operative at the side wall position it is operable from the opposite side of the bed adjacent the entrance side of the room 17. The operating handle 124 is pivotally mounted in the end rail 96 to provide a fulcrum for retracting the locking bolt and extends above the level of the end rail where it is equipped with a knob or handle exposed above the end rail in a position where it may be grasped to release the locking mechanism in either position of the bed. When the bed is disposed in either of its two locked positions and it is desired to move it to the opposite position, it is necessary merely to manipulate the

operating handle 124 to release the locking mechanism, whereupon the bed may then be rolled to the other position where it will automatically engage the stop at that location to maintain the position of the bed.

The seat and backrest 130 and 131 are disposed alongside of window 135 mounted in the side walls 11 or 12, and a sliding door 136 is disposed at the opposite side of the seat and adapted to be received in a pocket 137 provided therefor in the aisle partition 13 which permits of the opening movement of the door.

The combination member 111 in compartment 17 includes folding washstand 140 and concealed chair hopper 141 and is disposed at the aisle partition between the wall 52 and entrance door 136 where it is overlapped by the bed 100 when the bed is made ready for occupancy. The combination member 81, in compartment 16, is disposed at the aisle partition in the corner of the room between partition 19 and the entrance door 94 and it will be noted in each instance that the respective beds 27 and 100 overlie the hoppers 83 and 141 when the beds are extended, wherefore, in order to use the hoppers, which are each covered by a hinged cover seat, it is necessary first to remove the bed from its overlapping relation thereto before the hinged covers can be raised to reveal the hoppers. Hence, the respective beds are made easily operable by the counterbalancing mechanism 42 and the ball bearing mounting rollers 105.

From the foregoing it will be seen that there has been provided an arrangement involving rooms disposed at opposite sides of a central longitudinal aisle at different levels and readily accessible from the aisle with the aisle level coincident with the level of certain of the rooms and involving folding beds in the rooms at one level and sliding beds in all of the rooms at the other level. It will be noted that by the use of the particular arrangement of beds, as disclosed herein, with the sliding beds all disposed at one level and the pivotal folding beds all at another level, a greater number of accommodations can be gotten into a vehicle than would otherwise be possible. By the efficiency of the arrangement the greatest number of passenger accommodations may be incorporated in a vehicle without sacrificing the comfort of the occupants and without detracting from the standard of railway sleeping accommodations heretofore maintained. An important advance of the present construction over prior arrangements having rooms at two levels lies in the fact that the space over the seat in every room extends to the ceiling of the respective rooms, whereby the confined areas over the seats of earlier designs caused by overhanging shelves or bunks, or even floor areas, as a result of the overlapping of usable areas, is completely eliminated and the occupant afforded the luxury and unrestricted spaciousness of a high ceiling with attendant safety flowing from the elimination of the hazard always present with a structure immediately overhanging the head of a seated occupant. In this design the only overlapping areas between upper and lower accommodations is utilized for the accommodation of the respective beds for the individual rooms, in that one is disposed above the offset in the intermediate partition and the other is disposed beneath this offset portion, whereby this otherwise unusable space is utilized for the accommodation of the facilities not ordinarily used in daytime.

What is claimed is:

1. A fixed partition, a bed recess in the partition, a bed having a rigid section of fixed length hingedly mounted for pivotal movement from an operative position affording a horizontal supporting surface extending outwardly of said recess to a substantially vertical position in the recess, a mattress of greater length than said bed section supported upon said surface, and a member operable with the bed section hingedly connected thereto and movable to a horizontal position substantially on a level with said supporting surface and adapted to provide an extension of the supporting surface affording a full length support for the mattress in the horizontal position of the bed section, means in said recess operative as the bed is moved to its vertical inoperative position to fold said member relative to the bed and thereby engage said mattress to fold the mattress into said recess.

2. A fixed partition, a bed recess in the partition, a bed having a rigid section of fixed length hingedly mounted for pivotal movement from an operative position providing a horizontal supporting surface extending outwardly of said recess to a substantially vertical position in the recess, a mattress of greater length than said rigid section supported upon said surface, and a member operable with the bed section hingedly connected thereto, means in said recess operative as the bed is moved to its vertical inoperative position to fold said member relative to the bed, said member being adapted to provide an extension of said supporting surface affording a full length support for said mattress in the horizontal position of the bed section.

3. In a vehicle having a room including a partition, a folding seat arrangement in the room including a seat portion adjacent the partition and a relatively movable backrest, a bed recess in the partition, a bed foldable into said partition including a section hingedly mounted for pivotal movement from an operative position providing a horizontal supporting surface extending outwardly of said recess to a substantially vertical inoperative position in the recess, a mattress supported upon said surface, a member hingedly connected to the bed section and movable to a horizontal position providing an extension of said supporting surface in the horizontal position of the bed section, means in said recess operative as the bed is moved to its vertical inoperative position to fold said member relative to the bed and thereby engage said mattress to fold the mattress into said recess, said backrest being operatively connected to said bed section for folding movements therewith from an inoperative folded position overlying said seat portion when the bed is operative to an operative position in normal relation to the seat when the bed is inoperative, and means for counterbalancing the bed and backrest during folding operations disposed between said bed section and the seat arrangement.

4. In a vehicle having a room including a partition, a bed recess in the partition, a bed foldable into the partition including a section hingedly mounted for pivotal movement from an operative position providing a horizontal supporting surface extending outwardly of said recess to a substantially vertical inoperative position in the recess, a mattress supported upon said surface, a member hingedly connected to the bed section and movable to a horizontal position providing an extension of said supporting surface in the horizontal position of the bed section, said extension member

being foldable relative to the bed, means in said recess operative as the bed is moved to its vertical inoperative position to fold said member relative to the bed and thereby engage said mattress to fold the mattress into said recess, and means including a spring connected with the bed section to exert a force in a direction counterbalancing the weight of the bed during opening operations and to assist in the closing operations of the bed.

5. In a vehicle having a room including a partition, a bed recess in the partition, a bed foldable into the partition including a section hingedly mounted for pivotal movement from an operative position providing a horizontal supporting surface extending outwardly of said recess to a substantially vertical inoperative position in the recess, and a member hingedly connected to the bed section and movable to a horizontal position providing an extension of said supporting surface in the horizontal position of the bed section, a mattress overlying the supporting surface and said extension member, means in said recess operative as the bed is moved to its vertical inoperative position to fold said member

relative to the bed and thereby engage said mattress to fold the mattress into said recess.

BASIL E. JONES.
JAMES K. TULLEY.

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