April 18, 1950 M. WATTER 2,504,769

SLEEPING CAR ARRANGEMENT

Filed Dec. 7, 1945 4 Sheets-Sheet 1

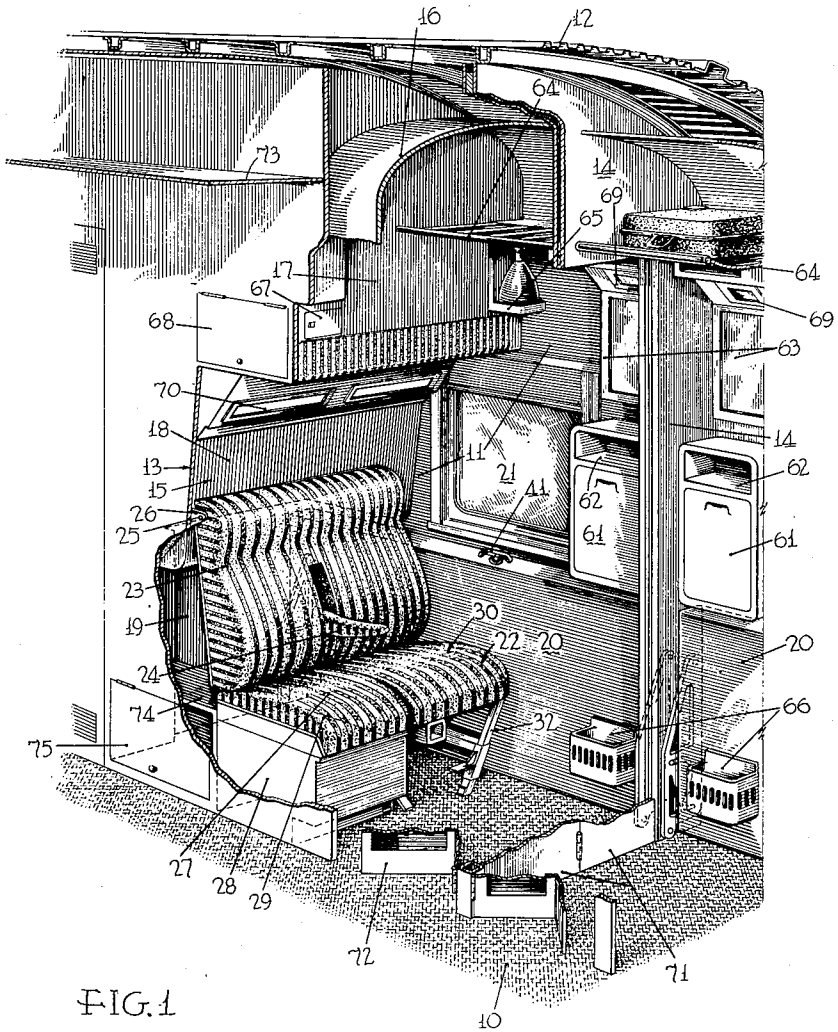



FIG. 1

INVENTOR
Michael Watter

BY Donald B. Waite
ATTORNEY

April 18, 1950 M. WATTER 2,504,769

SLEEPING CAR ARRANGEMENT

Filed Dec. 7, 1945 4 Sheets-Sheet 2

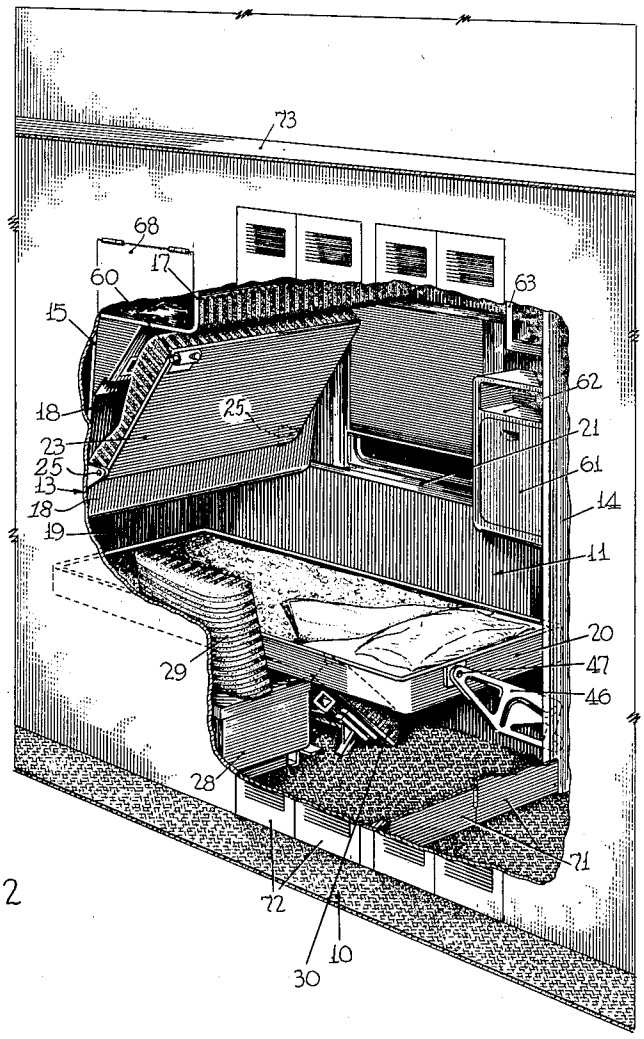



FIG. 2

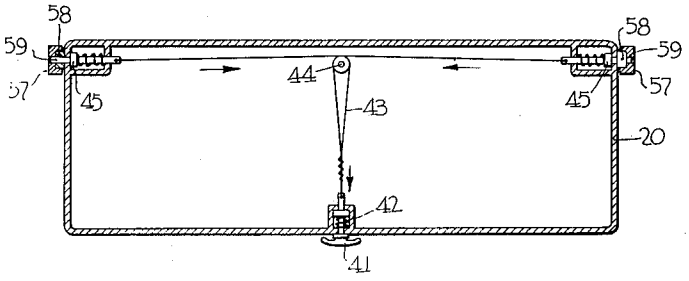



FIG. 6

INVENTOR
Michael Watter

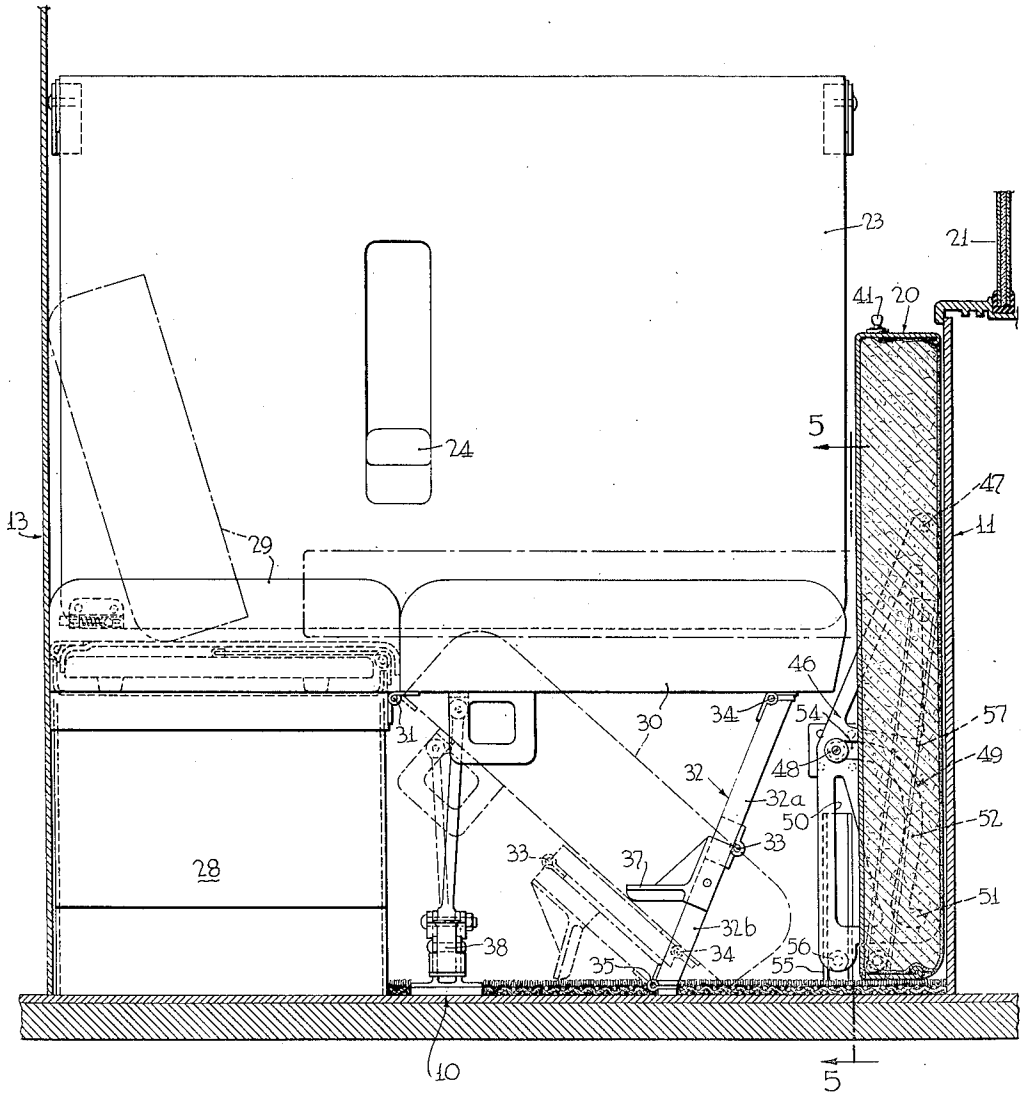
BY Donald B. Waite
ATTORNEY

April 18, 1950 M. WATTER 2,504,769

SLEEPING CAR ARRANGEMENT

Filed Dec. 7, 1945 4 Sheets-Sheet 3

FIG. 3




INVENTOR
Michael Watter

BY Howard B. Waite
ATTORNEY

April 18, 1950 M. WATTER 2,504,769

SLEEPING CAR ARRANGEMENT

Filed Dec. 7, 1945 4 Sheets-Sheet 4

FIG. 5

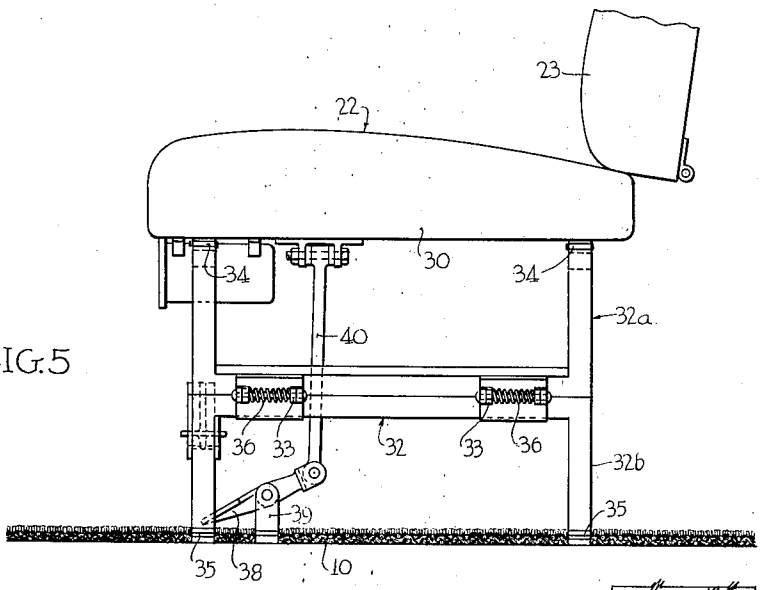
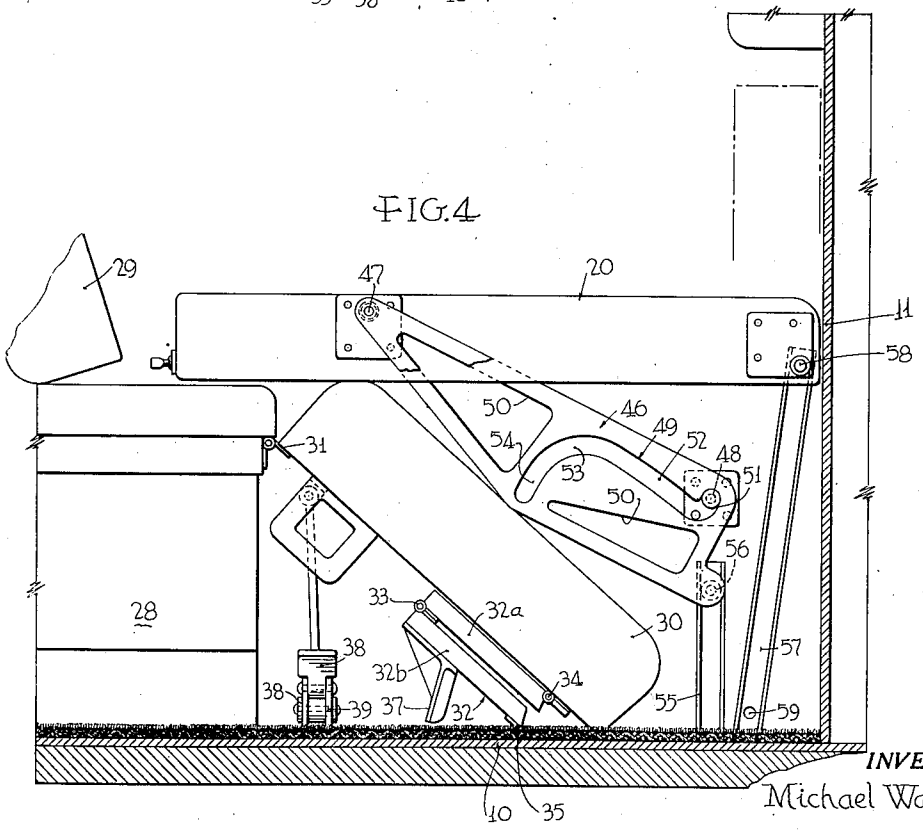



FIG. 4




INVENTOR
Michael Watter

BY Harold B. Waite

ATTORNEY

Patented Apr. 18, 1950 2,504,769

# UNITED STATES PATENT OFFICE

2,504,769

## SLEEPING CAR ARRANGEMENT

Michael Watter, Philadelphia, Pa., assignor to The Budd Company, Philadelphia, Pa., a corporation of Pennsylvania

Application December 7, 1945, Serial No. 633,324

11 Claims. (Cl. 105—315)

1

The invention relates to sleeping cars and particularly to sleeping cars of the type shown in a copending application Serial No. 599,349 to Lyon for Sleeping car.

Such cars consist of two longitudinal series of longitudinally arranged single occupancy rooms, one such series being placed on each side of the center aisle of the car. In these rooms the longitudinal seat level dimensions of each room available to the occupant when seated is substantially equal to the combined longitudinal dimensions of the plan form projection of the upright seat back, horizontal seat cushion and horizontally extended fore leg length of the occupant. Room constructions and furniture arrangements which admit these dimensions permit, with maximum passenger comfort, a maximum of rooms in a car of given length. Two series of rooms in a car of standard length will afford single occupancy rooms for thirty-two passengers.

The object of the invention has to do outstandingly with a more convenient arrangement of chairs and beds in certain of the rooms, it being a particular object to provide a simplified and more economical arrangement of the chairs and beds in said rooms, and to facilitate the movement of the beds and chairs to use and storage positions, and provide for greater ease of manipulation of the parts in changing from sitting room to bedroom use or vice versa.

It is a further object to achieve a low level bed whereby access is improved, with comfortable chair construction, which chair construction permits ease of operation to remove parts thereof out of the way to receive the bed in such low level position.

The invention also has for an object improvement in the support of the bed which not only facilitates its operation but decreases the cost of manufacture.

Other and further objects and advantages and the manner in which they are attained will become apparent from the following detailed description when read in connection with the drawings forming a part of this specification.

In the drawings,

Figure 1 is a diagrammatic fragmentary view of a railway car showing one entire room and part of an adjoining room in perspective and made up as sitting rooms, the view being taken as seen from the aisle, with parts of the aisle wall and parts of the transverse wall separating the adjoining rooms broken away so as to more clearly show the interior of the rooms;

Figure 2 is a similar diagrammatic fragmentary

2

perspective view from the aisle side showing the one room made up as a bedroom, this view showing less of the aisle wall broken away;

Figure 3 is a fragmentary diagrammatic transverse vertical sectional view on an enlarged scale through the entire room shown in Figure 1, the section being taken just in front of the chair of said figure; the bed and seat being shown in full lines in the positions of Figure 1 and in dot-and-dash lines in positions of Figure 2;

Figure 4 is a fragmentary transverse vertical sectional view taken just inside the adjacent end transverse wall of the room of Figure 2, the adjacent bed supporting bracket or lever being partly broken away; and the top of the bed in stored position being indicated in dot-and-dash lines;

Figure 5 is a fragmentary vertical longitudinal sectional view showing the seat and a part of the seat back as shown in Figure 1 in side elevation, and

Figure 6 is a diagrammatic sectional plan showing a bed locking means.

In the drawings, Figure 1, the floor of the car and rooms is represented by 10, the longitudinal car side wall by 11, the car roof by 12, the longitudinally extending aisle wall by 13, the vertical transverse wall interconnecting the car side and aisle walls and forming the wall separating the two adjoining rooms, by 14, the transverse wall forming the opposite end of the room by 15, and the room ceiling by 16. The transverse wall 15 comprises a vertical top portion 17, an offset slightly inclined intermediate portion 18, and a vertical bottom portion 19 offset from the intermediate portion. The lower margin of the vertical top portion 17 and the upper margin of the vertical bottom portion 19 are connected, respectively, to the upper and lower margins of the intermediate portion 18 by horizontal portions, giving this transverse wall a stepped longitudinal cross-sectional form.

The present invention has to do primarily with the seat and bed arrangement in a room of this general type, and this arrangement will accordingly now be described in detail.

When the room is made up as a sitting room, as shown in Figures 1 and 3, the fixed length fully made up bed 20 extends lengthwise along the car side wall, with its plane generally paralleling said wall and with one longitudinal margin thereof adjacent the floor 10 and the opposite longitudinal margin just below the windows 21, the height of the offset in the transverse wall 15 formed by the lower vertical portion 19 thereof and the horizontal portion connecting it to the

intermediate portion 18 being somewhat greater than the width of the bed, so as to receive one end of the bed in said offset.

The bed extends substantially throughout the length of the room from end transverse wall 14 to the bottom vertical portion 19 of transverse wall 15 and is supported and guided at its ends through the means connecting it to said transverse wall portions which will be described later on.

A chair designated generally by 22 is fixedly secured in the room facing longitudinally and extending from the vertical storage position of the bed transversely to the aisle wall 13. This chair comprises a separate back 23, suitably cushioned and upholstered and provided with a folding arm rest as 24, this back being pivotally supported adjacent its top edge, through pivot pins, as 25, engaging in brackets as 26, suitably secured to the adjacent room walls. The back has a suitable inclination and engages at the bottom suitable stops, not shown, to limit its rearward movement. The seat portion of the chair, designated generally by 27, is supported at the aisle side by an enclosed hopper 28, on which is supported the removable seat cushion section 29. The portion of the seat from the hopper outwardly to the folded bed, designated 30, is suitably cushioned and upholstered to bring it level with the seat cushion section 29 and is hinged, through longitudinally extending hinges 31 adjacent the top of the hopper enclosure 28 supporting the cushion section 29. It is preferably supported at its free end by a collapsible self-locking toggle strut arrangement designated generally 32. As shown in Figures 1 and 3, this strut inclines upwardly and outwardly from the floor 10 to the bottom of the hinged seat portion 30. The strut arrangement comprises two sections 32*a* and 32*b* hinged together through hinges 33, disposed at the outside of the strut, the sections 32*a* and 32*b* being hinged, respectively, to the seat portion 30 and to the floor 10 by hinges 34 and 35 arranged on the opposite side of the strut from the hinges 33. The ends of the strut sections 32*a*, 32*b* have flat surface engagement with each other, and with the respective seat and floor when the strut is in operative position, and it will be seen that the strut is thus automatically held, by the weight of the seat portion 30 or of said portion and its occupant, in the operative position of Figs. 1 and 3. To still further insure non-collapsing of the strut, and to aid in returning the strut to its operative position, springs 36, Fig. 5, may be provided at the hinges 33, these springs being biased to return the strut to operative position and hold it in such position, but allowing it to be collapsed against the action of the springs to the position shown in dot-and-dash lines in Figure 3 and in full lines in Figure 4.

To facilitate the collapse of the strut when it is desired to lower the hinged seat portion 30 to the position indicated, a laterally extending tread portion 37 may be provided on the lower strut section 32*b* adjacent the hinges 33, this tread portion extending from the opposite side of the strut from that on which the hinges 33 are located, so that the operator can start the collapse of the strut by merely stepping on this tread portion and thus causing the strut sections to swing about the hinges 33 toward the collapsed condition. The weight of the seat portion will thereafter be sufficient to move the seat to its lowered position with its free edge adjacent the floor and to maintain it in this position against



the action of the springs 36 or other counterbalancing means which may be provided.

To conveniently raise the seat portion 30 without stooping, to its normal raised position, a foot treadle 38 is hinged intermediate its ends to a bracket 39 secured to the floor and has its end opposite the treadle portion connected by a link 40 to the bottom of the seat portion 30. By stepping on the treadle, the link 40 pushes upwardly against the seat portion and causes it to turn about the hinges 31 to its raised horizontal position. A suitable counterbalance, such as a torsion spring at the hinges 31 (not shown) may be provided to reduce to a minimum the effort required on the treadle 38.

The bed 20 is normally locked in its vertical storage position paralleling the car side wall by a suitable latch mechanism, shown diagrammatically in Figure 6, which may be operated by pulling the handle 41 secured to its upper margin for operating the bed. This handle may have slight movement against the action of a spring 42 to pull the cables 43 passing around sheaves as 44 and connected to the respective spring pressed locking pins 45 to release said pins from their cooperating locking holes in the adjacent room walls. The bed is supported at each end by a lever or bracket 46 pivoted at 47 to the bed in a region adjacent its upper and inner margin and having a floating pivotal connection through a T-section pin 48 secured to the adjacent room wall, as 14 or 15, and curved slot 49 in the lever. The levers 46 may have cut-out portions 50 for lightness.

As shown, the slot 49 in the lever has a slight transverse offset portion 51 adjacent one end which merges with a longitudinally extending generally straight portion 52 extending toward the pivot 47 which, in turn, merges through a curved portion 53 into a generally transversely extending portion 54 at the opposite end of the slot, see Fig. 4. The lever is guided at its end supported from the adjacent wall by a short vertically extending guide, such as the channel 55, secured to the adjacent room wall and a roller pin 56 on the lever projecting at all times into said guide. The lower and outer margin of the bed is guided at each end by a slightly upwardly and outwardly inclined guide, such as the channel 57, secured to the adjacent room wall and a cooperating roller pin, as 58, secured to the adjacent end of the bed. This roller pin 58 may be integral with the adjacent locking pin 45, or a separate pin through which the locking pin 45 slides to engage the locking holes, as 59, at the top and bottom of the channel.

In the storage position of the bed, the T-section pins 48 are located at the end of the transverse end portions 54 of the slots 49 and these pins support the bed through the levers 46 in the position shown in Figures 1 and 3. Since the pivoted connection of the levers is adjacent the top of the stored bed and the pivotal support of the levers from the wall is located inwardly of the bottom of the bed, the bed will be held by its weight in this storage position. However, to prevent movement from this position, due to movements of the car, locking means such as hereinbefore described, are preferably provided to lock the bed in this position.

To make up the sitting room shown in Figures 1 and 3 into a bedroom, the seat back 23 is swung about its pivot pins 25 to the raised position shown in Figure 2, where it is locked by suitable means, such as a locking bolt 60 on the back

cooperating with a suitable catch (not shown) mounted on the aisle wall.

The movable seat cushion section 29 covering the hopper 28 may be set up on edge against the aisle wall as shown in Figure 2 or moved to any desired location and the hinged seat portion 30 may also be moved to the folded down position with its free end adjacent the floor in the manner already described and as shown in Figure 2.

The bed may now be moved from the vertical storage position alongside the car side wall to the horizontal use position shown in Figure 2, in which it is disposed at a low level substantially at the seat level, in the following manner.

To do this the handle 41 is grasped by the operator and pulled to, first, release the locking means securing the bed in its storage position, and then to draw the top of the bed toward the aisle, which causes the T-section pins 48 to travel in the slots 49 until, when the bed has been moved to horizontal position, they rest in the offsets 51 at the opposite ends of the slots, as shown in Figure 4. At the same time the guide roller pins 56 ride upwardly in the guideways 55 and by pressing down on the inner margin of the bed the outer margin may be raised to its use position at the location shown in ful lines in Figure 4, being guided in this movement by the inclined guideways 57. When in this position, the latch bolts 45 will be caused by their springs to engage in the adjacent locking holes, as 59, to lock the bed in this use position.

This latching means supports the bed at its outer margin and the levers provide brackets to support the bed adjacent the inner margin and the two thereby provide a firm support for the bed in the use position.

With the hereinbefore described arrangement, the bed can be moved from its storage position to its use position with a minimum of effort on the part of the operator, the width of the bed being such as to provide adequate standing room for the operator between the inside margin of the bed and the aisle wall. Furthermore the bed is moved to its use position without raising its inner margin, and its use position is at a low level, substantially at seat level, so that the position of the bed is, as it approaches its use position, opposite the lower portion of the legs of the operator, and its width can thus be made a maximum, this being allowed by the relatively small width of the lower leg region of the operator.

The reverse movement of the bed will be clear from the foregoing description. To move it to storage position from the use position, the outer margin of the bed is released by pulling on the handle 41 to release the latching bolts 45, after which the outer margin of the bed is allowed to descend by gravity until the bed is supported by the T-section pins engaging the curved portions of the slots in the levers 42. By a slight outward push on the inner margin of the bed it is easily moved to its final storage position shown in Figures 1 and 3, where it is locked in the manner already described.

After the bed has been moved to storage position, the movable seat cushion 29 and movable seat portion 30 and the seat back 23 are brought to their use position as shown in Figures 1 and 3 and the room is in condition for use as a sitting room.

The room is provided with all the usual appurtenances in addition to those already described, to cater to the comfort and convenience of its occupants. In the corner between the outside wall 11 and the transverse wall 14 is arranged a folding wash basin 61, a shelf 62 directly above it, and a mirror and cabinet 63 above the shelf. Along the outside wall 11, and extending between transverse wall 14 and upper vertical portion 17 of transverse wall 15 is a baggage rack 64. Below it on wall portion 17 may be arranged a shelf 65 for receiving the carafe. A used towel rack 66 may be secured to the bottom of the bed below the folding wash basin.

A door 67 opening into the room above the seat provides access to a shoe box, aisle access thereto being had through a door 68.

Concealed lighting fixtures are shown provided at 69 above the mirrow and at 70 above the seat.

The transverse wall 14 separates the room shown fully in the views from another similar room, arranged symmetrically with respect thereto about the transverse wall 14, which wall is preferably provided with a folding partition 71, which may be folded against the aisle wall, and thus convert the two rooms into one large room. Access to the aisle is had through the doorway and folding door 72 arranged between the seat and the wall 14.

Space for air conditioning ducts and the like is provided above the aisle ceiling 13 and room cealing 16 and the adjacent car roof 12.

Adjacent the floor and between the hopper 28 and the lower vertical portion 19 of transverse wall 15 and extending to the aisle wall may be arranged a storage locker 74 accessible through door 75 from the aisle which locker can be used for extra bed clothing or the like.

While a specific embodiment of the invention has been hereinbefore described in detail, it will be understood that changes and modifications may be made by those skilled in the art without departing from the main feature of the invention, and such changes and modifications are intended to be covered by the appended claims.

What is claimed is:

1. In a sleeping car, a room convertible from a sitting room to a bedroom or vice versa and arranged between an aisle wall and a car side wall and spaced transverse walls interconnecting said aisle and car side walls, a fixed-length made-up bed extending substantially the length of the room and disposed, when the room is made up as a sitting room, so as to extend lengthwise along and with its plane generally paralleling said car side wall and with its lower margin adjacent the floor of the room, a chair in the room facing longitudinally and extending transversely from the stored bed toward the aisle wall, said chair having separate seat and back portions, the back portion of the seat being movable, when the room is made up as a bedroom, to a position vertically above the stored position of the bed and at least a portion of the seat adjacent the stored bed being movable from its normal raised position down to a position nearer the floor, and the bed being bodily movable from its vertically extending storage position to a substantially horizontal use position at approximately normal seat height above the floor, the bed being of a width extending, when in use position, from the car side wall to a position near the aisle wall, but leaving standing room for an occupant between the inner margin of the bed and said aisle wall.

2. In a sleeping car, a room convertible from a sitting room to a bedroom or vice versa and arranged between an aisle wall and a car side

wall and spaced transverse walls interconnecting said aisle and car side walls, one of said transverse walls being offset to form a recess adjacent the floor of the room, a fixed-length made-up bed extending substantially the length of the room and disposed, when the room is made up as a sitting room, so as to extend lengthwise along and with its plane generally paralleling said car side wall with its lower margin adjacent the floor of the room and having one end thereof projecting into said recess, a longitudinally facing chair in the room disposed in front of said recess and extending transversely from the stored bed toward the aisle wall, said chair having separate seat and back portions, the back portion being movable, when the room is made up as a bedroom, from its normal position to a raised position vertically above said recess, and at least a part of the seat portion adjacent the stored bed being movable from its normal raised position down to a position nearer the floor, and the bed being bodily movable from its vertically extending storage position to a substantially horizontal use position at approximately normal seat height above the floor of the room, the bed being of a width extending, when in use position, from the car side wall to a position near the aisle wall, but leaving standing room for an occupant between the inner margin of the bed and said aisle wall.

3. In a sleeping car, a room convertible from a sitting room to a bedroom or vice versa and arranged between an aisle wall and a car side wall and spaced transverse walls interconnecting said aisle and car side walls, a fixed-length made-up bed extending substantially the length of the room and disposed, when the room is made up as a sitting room, so as to extend lengthwise along and generally paralleling said car side wall with its bottom margin adjacent the floor of the room, a chair in the room facing longitudinally and extending transversely from the stored bed toward the aisle wall, said chair having separate seat and back portions, the back portion being hinged adjacent its top and swingable about said hinge, when the room is made up as a bedroom, to a raised storage position vertically above the top of the stored bed, and a part of the seat portion adjacent said stored bed being hinged on a line extending longitudinally of the car to a fixed seat portion and swingable from its normal raised position downwardly to a position nearer the floor, and the bed being bodily movable from its vertical extending storage position to a substantially horizontal use position at approximately normal seat height above the floor of the room, the bed being of a width extending, when in use position, from the car side wall to a position near the aisle wall, but leaving standing room for an occupant between the inner margin of the bed and said aisle wall.

4. In a sleeping car, a room convertible from a sitting room to a bedroom or vice versa, and arranged between a center aisle wall and a car side wall and spaced transverse walls interconnecting said aisle and car side walls, a fixed-length made-up bed extending substantially the length of the room and disposed, when the room is made up as a sitting room, so as to extend lengthwise along and with its plane generally paralleling said car side wall, a seat fixedly mounted in the room, facing longitudinally and extending transversely from the stored bed toward the aisle wall, a part of said seat adjacent the stored bed being hinged to the other part adjacent the aisle, a collapsible strut normally holding said hinged seat part in normal raised position, means for collapsing said strut and thereupon moving the said hinged part to a lowered position adjacent the floor, and means for moving the bed from its vertically extending storage position to a horizontal use position substantially at normal seat height the bed being of a width extending, when in use position, from the car side wall to a position near the aisle wall, but leaving standing room for an occupant between the inner margin of the bed and said aisle wall.

5. In a sleeping car, a room convertible from a sitting room to a bedroom and vice versa and arranged between longitudinally extending spaced walls and spaced transverse walls interconnecting said longitudinal walls, a fixed-length made-up bed extending substantially the length of the room and disposed, when the room is made up as a sitting room, so as to extend length-wise along and with its plane generally paralleling one of said longitudinal walls with its bottom margin adjacent the floor of the room, a seat in said room extending transversely from the stored bed toward the other longitudinal wall, a portion at least of said seat comprising the portion adjacent the folded bed being foldable downwardly about a horizontal axis remote from said folded bed, and the bed being movable from its vertically extending stored position to a horizontal use position at the approximate height of the seat without substantially raising it above the top of its stored position, the bed being of a width extending, when in use position, from the longitudinal wall adjacent which it is stored to a position near the other longitudinal wall but leaving standing room for an occupant between its margin and said other longitudinal wall.

6. In a sleeping car, a room convertible from a sitting room to a bedroom and vice versa and arranged between spaced longitudinally extending walls and spaced transverse walls interconnecting said longitudinal walls, a fixed-length bed extending substantially the length of the room and disposed, when the room is made up as a sitting room, so as to extend lengthwise along and with its plane generally paralleling one of said longitudinal walls and with its bottom margin adjacent the floor, a seat in the room extending transversely from the stored bed toward the opposite longitudinal wall, said seat being movable at least for a substantial portion of its width, to a lowered position nearer the floor, and the bed being supported and guided for movement from its vertical stowed position to a horizontal use position at substantially normal seat height while maintaining its lower and outer margin in close adjacency to said one longitudinal wall, the bed being of a width extending, when in use position, from the longitudinal wall adjacent which it is stored to a position near the other longitudinal wall but leaving standing room for an occupant between its margin and said other longitudinal wall.

7. In a sleeping car, a room convertible from a sitting room to a bedroom and vice versa and arranged between spaced longitudinally extending walls and spaced transverse walls interconnecting said longitudinal walls, a fixed-length bed extending lengthwise of the room substantially the full length thereof and movable from a vertical storage position along and with its plane paralleling, a longitudinal wall

to a horizontal use position at substantially right angles to said wall, the bed being supported and guided in such movement by a pair of levers pivoted to the opposite ends of the bed respectively, adjacent to the free margin of the bed and through their opposite ends through a floating pivotal connection between the levers and the respective transverse walls, the opposite margin of the bed being guided in its movement by pins on the bed engaging fixed guides on the respective transverse walls the bed being of a width extending, when in use position, from the longitudinal wall adjacent which it is stored to a position near the other longitudinal wall but leaving standing room for an occupant between its margin and said other longitudinal wall.

8. In a sleeping car, a room convertible from a sitting room to a bedroom and vice versa and arranged between spaced longitudinally extending walls and spaced transverse walls interconnecting said longitudinal walls, a fixed-length bed of substantially the full length of the room and extending when the room is made up as a sitting room in stored position lengthwise of and with its plane generally parallel to one of said longtitudinal walls, a chair extending transversely from said stored bed toward the opposite longitudinal wall, said chair comprising a hopper disposed adjacent said last-named wall and a removable cushion carried by said hopper, and a hinged seat portion hinged to said hopper and having a cushion normally in substantial horizontal alignment with said removable cushion, said hinged seat portion being supported by a collapsible support and foldable down to an inoperative position nearer the floor when said support is collapsed, the bed being movable, when said removable cushion and hinged seat portion are moved to inoperative position, to a horizontal use position substantially at the normal level of said seat cushion the bed being of a width extending, when in use position, from the longitudinal wall adjacent which it is stored to a position near the other longitudinal wall but leaving standing room for an occupant between its margin and said other longitudinal wall.

9. In a sleeping car, a room convertible from a sitting room to a bedroom or vice versa and arranged between spaced longitudinally extending walls interconnected by spaced transverse walls, a seat in said room and a movable bed arranged in storage position with its plane extending vertically alongside said seat and



movable to a horizontal use position occupying at least a portion of the space normally occupied by said seat, said seat comprising a hinged portion normally supported by a self-locking toggle strut but movable about its hinge out of the path of the bed by the breaking of said toggle strut, and foot-operable means for breaking the toggle strut.

10. In a sleeping car, a room convertible from a sitting room to a bedroom and vice versa and arranged between spaced longitudinally extending walls interconnected by spaced transverse walls, a seat in said room, and a movable bed arranged in storage position with its plane extending vertically alongside said seat and movable to a horizontal use position occupying at least a portion of the space normally occupied by said seat, said seat comprising a hinged portion normally supported remote from its hinge by collapsible support means but movable about its hinge to inoperative position out of the path of the bed when said support means is rendered inoperative, and foot-operable means for returning said hinged portion to normal position.

11. In a sleeping car, a bedroom having enclosing walls, a bed extending lengthwise adjacent one of said walls and between opposing walls and foldable from a vertical storage position flanking said one wall to a horizontal use position at a position lower than the top thereof in storage position, and supporting and guiding means for the bed in such movement comprising a pair of levers pivotally secured at one of their ends to the respective ends of the bed adjacent one longitudinal margin thereof and having a floating pivotal connection at their opposite ends with the respective opposing walls of the room, said floating connection being through a cam slot on each lever engaging a fixed pin on the adjacent wall and a pin carried by each lever engaging a vertical guide on the adjacent wall, the margin of the bed opposite the margin supported by said levers being guided in generally vertically extending guideways on the adjacent room walls, and means for locking said margin in its raised position.

MICHAEL WATTER.


REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

| Number | Name | Date |
|---|---|---|
| 1,011,952 | Hansen | Dec. 19, 1911 |