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K. L. SCHIFF
ROOM ARRANGEMENT WITH MOVABLE BED
FOR SLEEPING CARS OR THE LIKE

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3 Sheets-Sheet 1

FIG. 1

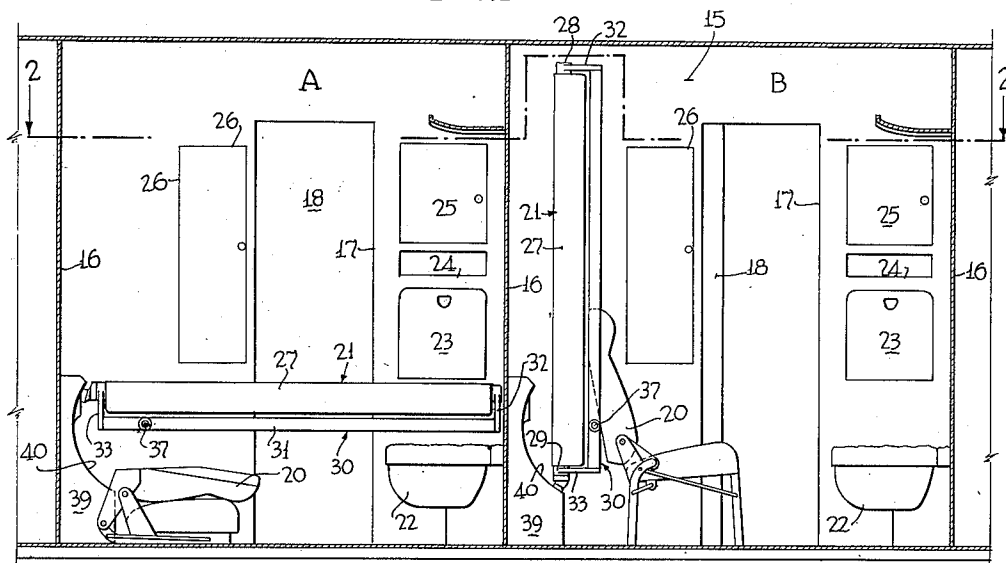
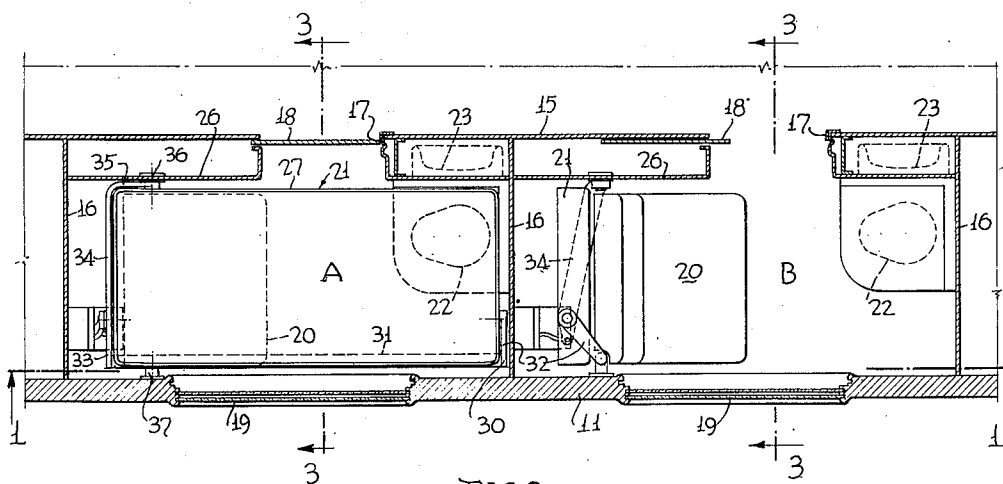


FIG. 2

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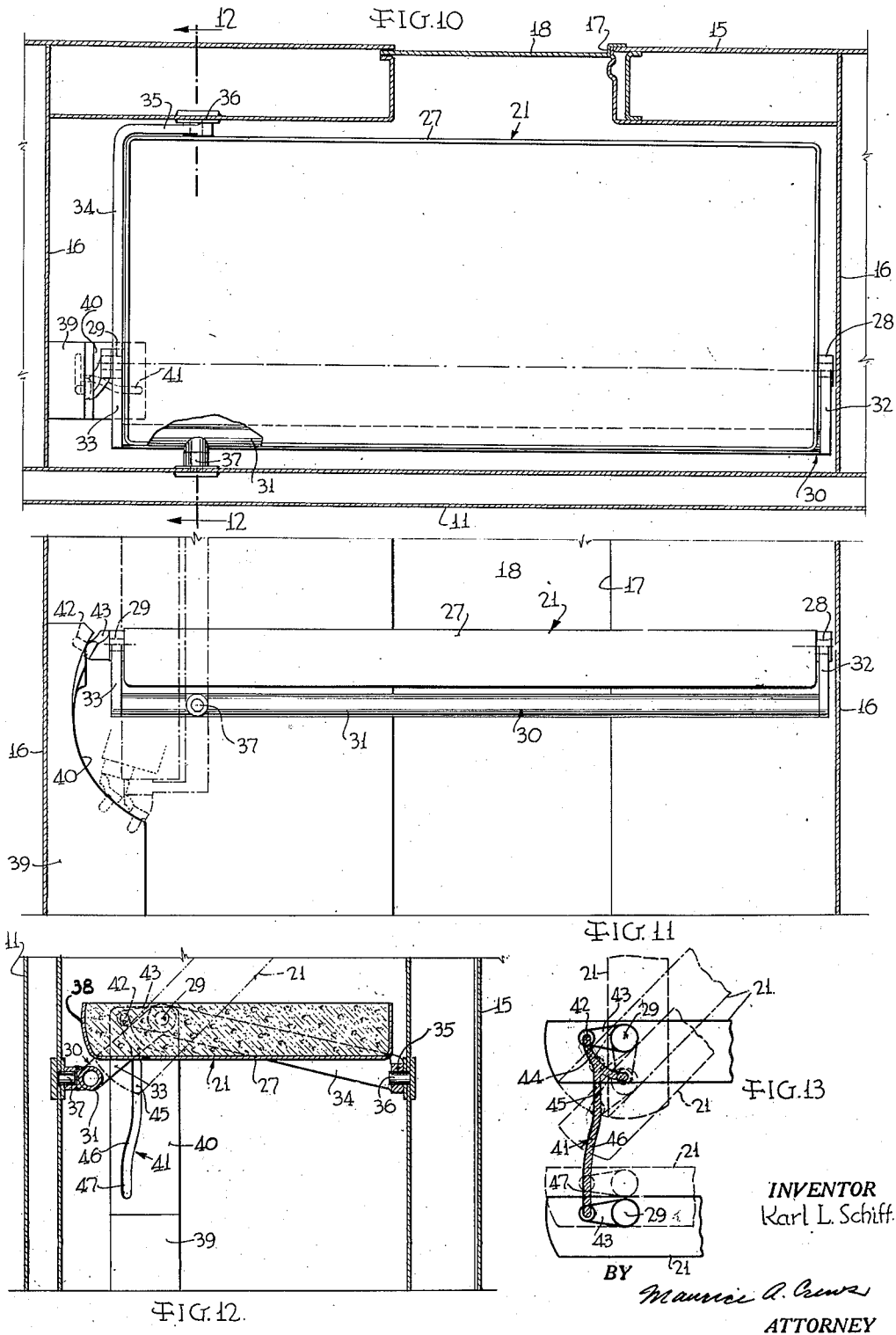
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UNITED STATES PATENT OFFICE

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ROOM ARRANGEMENT WITH MOVABLE BED
FOR SLEEPING CARS OR THE LIKEKarl Ludwig Schiff, Philadelphia, Pa., assignor to
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9 Claims. (Cl. 105—315)

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The invention relates to sleeping cars or the like, and particularly to sleeping cars in which rooms are arranged on opposite sides of a center aisle.

Such rooms are usually equipped with appurtenances making them readily adaptable for daytime or nighttime travel and, to this end, they are equipped with a bed, a seat and seat back, a hopper, a washbasin, a wardrobe and other accessories. It is desirable, for economical use of the space available, to have the bed, when in horizontal use position, extend over the seat, which folds under the bed, and the hopper arranged at the end of the room opposite the seat, and to have the bed in this position extend over substantially the entire length and width of the room. Heretofore, the bed in such rooms has been foldable about a horizontal hinged connection adjacent one end thereof against a vertical transverse wall of the room, to prepare the room for daytime occupancy, or whenever the occupant desired access to the hopper when the bed was in use position. To so raise the bed, it was necessary to open the room door and step into the doorway to allow the swinging bed to be moved past the occupant.

It is a main object of this invention to avoid this inconvenience and lack of privacy by providing a mounting and moving means for the bed which permits it to be readily moved from its horizontal use position to one position for providing access to the hopper and standing room for dressing, and to another position when the room is being converted for daytime occupancy, and all these movements being rendered possible with the occupant standing at the side of the bed and with the door of the room closed.

To this end, a novel mounting for the bed is provided which permits swinging it about two axes, intersecting and preferably at right angles to each other, i. e., the bed may be moved from its use position about an axis extending lengthwise thereof to a vertical position adjacent a longitudinal wall of the room and about a transverse axis adjacent one end thereof to a vertical stowed position adjacent one end of the room. In the intermediate positions of the bed, there may be a combination of these movements.

This object and other and further objects and the manner in which they are attained will become fully 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 vertical longitudinal sectional

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view through an adjacent pair of rooms equipped according to the invention, the room at the left being shown made up for nighttime occupancy, and the room at the right for daytime occupancy, and the section being taken substantially along the line 1—1 of Figure 2 looking toward the aisle;

Figure 2 is a horizontal sectional view of the rooms shown in Figure 1, the section being taken substantially along the line 2—2 of Figure 1;

Figure 3 is a transverse sectional view through a sleeping car equipped with rooms according to the showing of Figures 1 and 2, the room at the right of the center aisle being shown in section substantially as indicated by the line 3—3 at the right of Figure 2, and the room at the left of the aisle being shown in section substantially as indicated by the line 3—3 at the left of Figure 2;

Figure 4 is a partial transverse sectional view through a room, looking toward the hopper end thereof, and showing the bed in folded position rendering the hopper accessible and providing adequate standing room for dressing or undressing;

Figures 5, 6, 7, 8 and 9 are diagrammatic views illustrating the successive steps in the movement of the bed from the vertical stowed position adjacent one end of the room to the horizontal use position;

Figure 10 is an enlarged detail sectional plan view of the room at the left of Figure 2, the section being taken below the window opening and parts being broken away to show more clearly the mounting of the bed;

Figure 11 is an enlarged sectional detail view similar to the view of the left-hand bed in Figure 1 and showing the bed in full lines in the horizontal use position and fragmentarily in dotted and dot-and-dash lines in two other positions;

Figure 12 is an enlarged fragmentary sectional view taken substantially along the line 12—12 of Figure 10; and

Figure 13 is a developed view of the cam slot controlling the movements of the bed, the bed being diagrammatically shown in the positions it assumes at different positions of the cam.

In the drawings, numeral 10, Figure 3, designates a car body equipped with the invention, the car body having side walls 11, 11, a floor 12 and a roof 13. Centrally of the car is the longitudinally extending aisle 14 flanked by the aisle walls 15, 15.

Transverse walls 16 spaced longitudinally and interconnecting the side and aisle walls divide

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the space into adjacent rooms. Two of these rooms shown in Figures 1 and 2 are designated A and B. Room A is shown made up as a bedroom, and room B as a sitting room.

In the aisle wall, each room is provided with a doorway 17 closed in this case by a sliding door, as 18. In the car side wall, each room is provided with a large window 19.

Each room is provided with a folding seat, as 20, facing longitudinally and disposed with its back against the vertically extending stowed bed 21, as shown in room B. When the bed is swung down to the horizontal use position as shown in room A, the chair is folded, as shown, out of the path of the bed.

Each room is also provided with a hopper 22 in the corner formed by the aisle wall 15 and a transverse wall 16, this hopper facing the seat and being provided with a folding seat cover for normally closing it, when it may be used as an additional seat.

A folding washbasin 23, shelf 24 and medicine cabinet 25 may be arranged above the hopper along the aisle wall. At the opposite side of the doorway, a wardrobe 26 is arranged along the aisle wall. Other usual accessories are provided for the comfort and convenience of the occupants.

The manner of mounting and moving the bed, which forms the main feature of the invention, will now be described in detail.

The bed, which is shown diagrammatically in section, will be understood to be of the type including a shallow box-like frame 27, in which are received the mattress and springs and the bed clothes to provide a fully-made-up bed.

This box-like bed frame 27 is pivotally supported through trunnions or the like 28 and 29, Figures 10 and 11, at its opposite ends and adjacent its outer longitudinal margin by a U-shaped frame 30 having a longitudinal member 31, rigid against torsion, and arms 32 and 33 receiving the trunnions 28 and 29 of the bed. The arm 33 at one end of the bed is extended by a portion 34 arranged at an angle to the portion 33 connecting the trunnion 29 with the longitudinal member 31, and this extension 34 has a right-angularly related part 34, Figures 2 and 10, extending along the inner side of the bed frame for a short distance inwardly from the adjacent end. The part 35 and the longitudinal member 31 are pivoted respectively to the aisle wall 15 and the adjacent car side wall at 36 and 37, respectively, see Figures 10 and 12.

As shown in Figure 12, the outer side wall 38 of the bed frame 27 is inclined and curved so as to swing past the member 31 when the bed frame is swung about the trunnions 28 and 29 to the dot-and-dash position shown in that figure and at the left of Figure 3, or to the full-line position shown in Figure 4.

When the bed is swung from the horizontal position shown in Figure 12 to the vertical position shown in Figure 4, the space between it and the aisle wall is free to provide access to the hopper and also to provide ample standing space for dressing and undressing. This movement of the bed can be readily effected by swinging the bed frame about the pivots 28 and 29 while standing alongside the bed, as shown in Figure 3.

To positively guide the bed in its movement between the horizontal use position and the vertical stowed position adjacent one of the transverse walls 16 forming one end of the associated room, any suitable guiding means may be pro-

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vided. The cam means shown is but one of a number of means that could be provided.

Adjacent the wall 16 against which the bed is folded, when the room is made up for daytime occupancy, a block 39 is rigidly secured, and this block has a curved face 40 corresponding generally to an arc struck from the transverse pivot axis defined by pivots 36 and 37.

In the curved face of this block is provided a cam groove 41, see Figures 12 and 13, and this groove is engaged by a follower pin, as 42, which may have a suitable anti-friction roller (not shown) mounted thereon, the follower pin being in turn carried by an arm 43 which is rigidly secured to the trunnion 29 rigid with the bed frame. At the top this cam groove has an arcuate portion 44 conforming to the arc of a circle with the axis of trunnion 29 as a center. This arcuate portion is of sufficient length to permit the movement of the bed from the use position shown in Figure 12 to the vertically extending position adjacent the side wall shown in Figure 4, and as indicated, respectively by the upper full-line position of the bed and the vertical heavy dotted-line position of Figure 13. From approximately the center of the arcuate portion 44, the cam groove opens in a vertical portion 45, which then merges into a laterally inclined portion 46, which then merges with a lower vertical portion 47.

The action of the cam in controlling the movement of the bed from the lower horizontal use position to the vertical stowed position adjacent an end wall of the room, is made clear by the diagrams of Figures 5 to 9, inclusive, and the dot-and-dash and full-line positions of the bed shown in Figures 3 and 13. As is clear from Figures 3 and 13, as the bed is moved from the full-line position, top of Figure 13, to the first dot-and-dash position, the follower pin 42 is moved from the end of the arcuate portion 44 of the cam groove 41 to a point vertically above the vertical portion 45. Then the follower pin 42 is moved through the vertical portion 45 of the cam groove to the second dot-and-dash position of the bed in these figures. So far, the bed has been moved with its inner margin away from the operator and the upward movement of its free end may then be continued with the follower traveling through the inclined portion 46 of the groove. In this movement, the bed is again returned from its laterally tilted position shown in the upper dot-and-dash-line position of Figure 3 to laterally level position, as indicated by the lower dot-and-dash position of Figure 13 and as shown in Figure 6. From this position, while the follower pin moves through the lower vertical portion 47 of the cam groove, from the position indicated in dotted lines in Figure 11, the bed is moved to the vertical folded position shown in the full lines in Figure 5 and indicated diagrammatically by the dot-and-dash line position in Figure 11 and the lower full-line position in Figure 13.

It will be understood that while the bed is being moved between its stowed and use positions, such movement may be facilitated by the employment of suitable counterbalancing means.

Similarly, suitable means (not shown) are provided to lock the bed in its various positions, namely, the stowed position, the intermediate position of Figure 4 and the horizontal use position.

While a specific embodiment of the invention has been described herein in detail, it will be

understood that various changes may be made in the construction and arrangement without departing from the spirit and scope of the invention. As an example, there need not be a guide correlating the movements of the bed about its two axes, but the bed may first be swung about one axis into the use position and then about the other axis into a second position other than the stowed position. As another example, the guiding means may be such as to correlate the movement of the bed when it is folded down so that it assumes at first the second position but allows the bed subsequently to be moved immediately from the use position to the stowed position without first being moved into the other position.

What is claimed is:

1. In a sleeping car, a room defined by longitudinally extending center aisle and car side walls and spaced transverse walls interconnecting said aisle and car side walls, a bed, when in use position, extending horizontally and substantially over the length and width of the room and movable between its horizontal use position and a vertically extending stowed position adjacent one of the room walls, and means supporting said bed in the room for swinging movement about two axes intersecting each other in such movement between stowed and use positions, one of said axes extending longitudinally of the car generally parallel to the car side wall and the other axis extending transversely of the car generally at right angles to said side wall.

2. In a sleeping car, a room defined by longitudinally extending center aisle and car side walls and spaced transverse walls interconnecting said aisle and car side walls, a bed in said room movable between a horizontal use position extending substantially over the length and width of the room and a stowed position extending with its plane parallel to one of said transverse walls, the bed further being movable to an intermediate position from its use position in which it extends with its plane parallel to the longitudinally extending walls, and means for mounting the bed on two right-angularly related axes whereby such movements of the bed may be had,

One of said axes extending longitudinally of the car generally parallel to said longitudinally extending walls and the other axis extending transversely generally at right angles to said longitudinally extending walls.

3. A room corresponding generally in dimensions to the length and width of a bed, a bed in said room movable between stowed and use positions, said bed being pivotally mounted in a frame, and the frame being pivotally mounted on the room walls at substantially right angles to the pivot axis of the bed in the frame, whereby the bed may be moved independently of the frame or together with the frame between the stowed and use positions thereof, the pivot axis of said frame extending at substantially right angles to the length of the room and the pivot axis of the bed in said frame extending generally parallel to said length.

4. In a sleeping car, a room defined by spaced walls extending lengthwise thereof and spaced walls transversely thereof interconnecting said first-named walls, a bed in said room movable between stowed and use positions and, when in

use position, extending over substantially the length and width of the room, a frame hinged adjacent one end of the room on the lengthwise walls thereof, and said bed being hinged in said frame at substantially right angles to the hinge axis of said frame, whereby the bed may be moved to a position having its plane paralleling the lengthwise walls, or to a position having its plane paralleling the transverse walls, of the room.

5. In a sleeping car, a room defined by longitudinally extending center aisle and car side walls and spaced transverse walls interconnecting said aisle and car side walls, a bed in said room when in horizontal use position occupying substantially the length and width of the room, said bed being pivoted on a longitudinal axis in a frame pivoted on a transverse axis on said longitudinally extending walls, said mounting permitting movement of the bed from a vertical stowed position with its plane paralleling the transverse walls to an intermediate position with its plane paralleling the longitudinal walls and finally to a horizontal use position.

6. A room corresponding generally in dimensions to the length and width of a bed, a bed in said room movable between stowed position lengthwise flanking one of the room walls and a horizontal use position, the bed being further movable to an intermediate position flanking another of the room walls, and means for supporting and guiding the bed in such movements, including a support frame for the bed in which the bed is mounted to swing on one axis parallel to said one room wall, the support frame itself being mounted to swing on another axis, at right angles to said first axis.

7. A room and a bed according to claim 1 in which said first axis extends parallel to and is arranged near one of the short sides of the bed.

8. A room and a bed according to claim 1, means for guiding said bed from its stowed position into a position other than its use position by compound swinging movement about said two axes, said means permitting the bed to be swung about one of said axes from the said other position to use position and vice-versa.

9. A support for a movable bed in a room, said support comprising a bed frame and means adapted for securement to the room structure and to the bed frame, said means comprising journals having two axes of rotation which cross each other, a first axis extending transversely and a second axis extending generally in the direction of the length of the bed, one of said axes being parallel to the length of the room and the other at right angles thereto, the bed occupying, when in use position, substantially the length and width of the room.

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