Aug. 21, 1951 W. E. BURNETT 2,564,878

SEAT STRUCTURE

Filed March 1, 1947 4 Sheets-Sheet 1

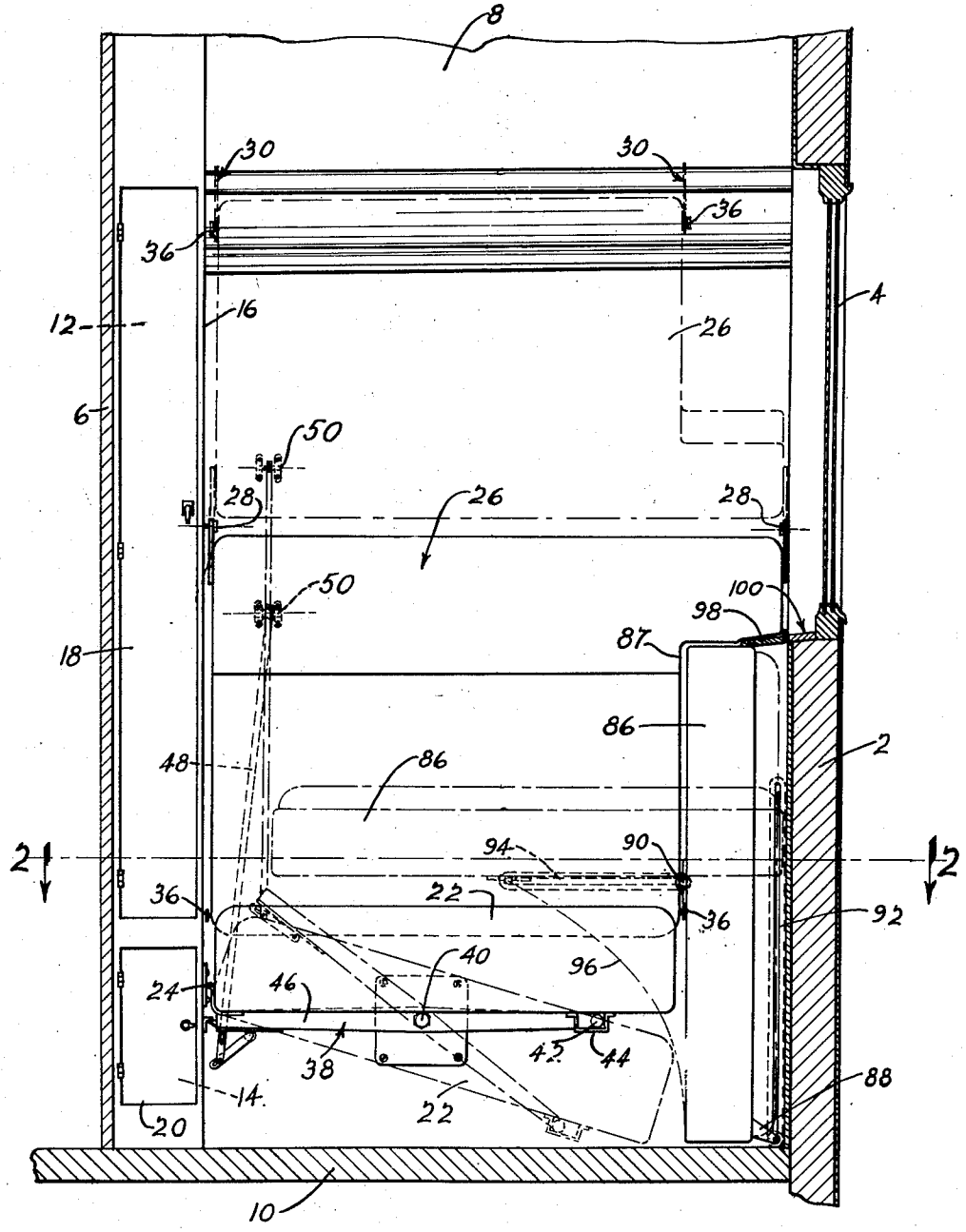

FIG. 1

INVENTOR.
William E. Burnett
BY George R. Ericson
ATTORNEY.

Aug. 21, 1951 W. E. BURNETT 2,564,878

SEAT STRUCTURE

Filed March 1, 1947 4 Sheets-Sheet 2

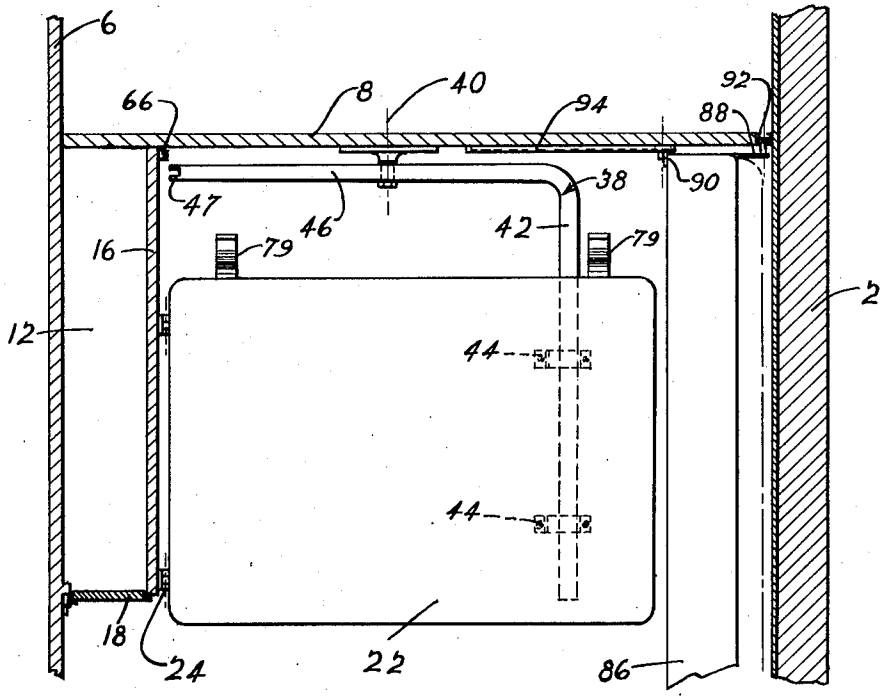

FIG. 2.

INVENTOR.
William E. Burnett
BY George R. Ericson
ATTORNEY.

Aug. 21, 1951 W. E. BURNETT 2,564,878

SEAT STRUCTURE

Filed March 1, 1947 4 Sheets-Sheet 3

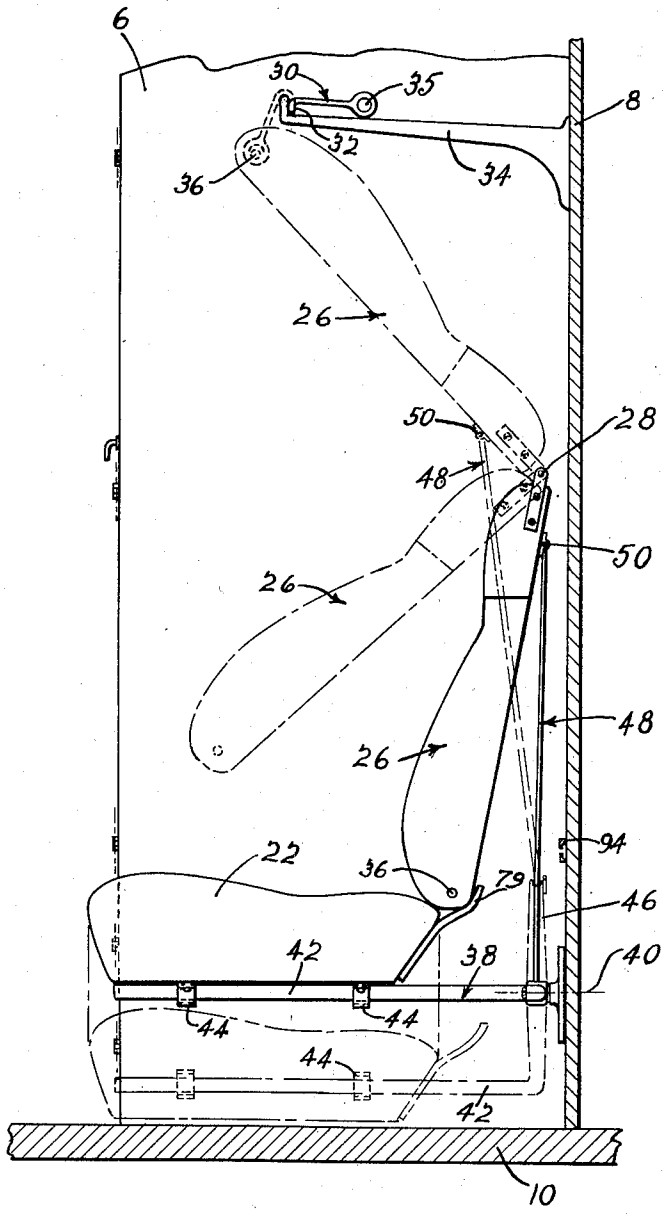

FIG. 3.

INVENTOR.
William E. Burnett
BY
George R. Ericson
ATTORNEY.

Aug. 21, 1951 W. E. BURNETT 2,564,878

SEAT STRUCTURE

Filed March 1, 1947 4 Sheets-Sheet 4

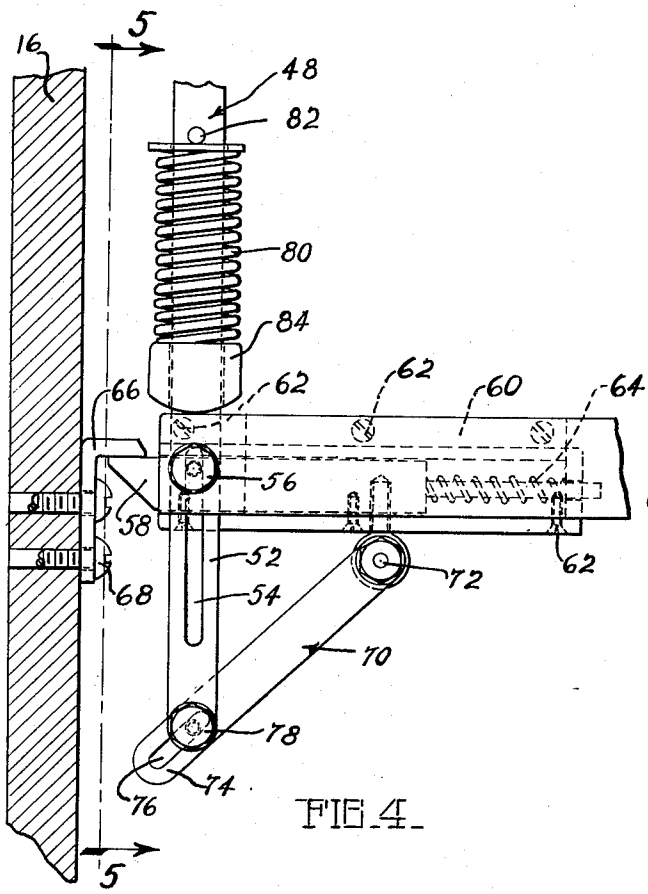

FIG. 4

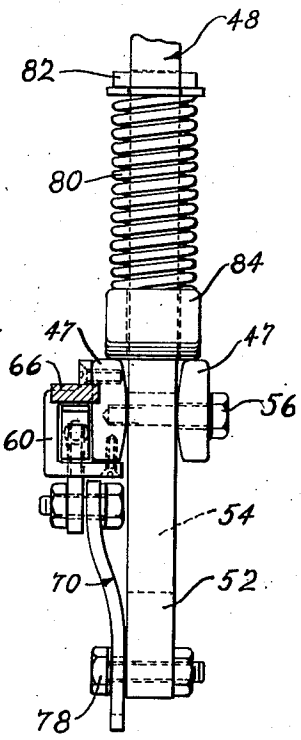

FIG. 5

INVENTOR.
William E. Burnett
BY George R. Ericson
ATTORNEY.

Patented Aug. 21, 1951

2,564,878

UNITED STATES PATENT OFFICE

2,564,878

SEAT STRUCTURE

William E. Burnett, Montclair, N. J., assignor to American Car and Foundry Company, New York, N. Y., a corporation of New Jersey

Application March 1, 1947, Serial No. 731,839

8 Claims. (Cl. 155—6)

1

This invention relates to seat structure and particularly to seat structure for small rooms, such as those provided in railway sleeping cars.

The space available in rooms of this type for the placement of necessary furniture and other facilities is limited and must therefore be utilized to the best advantage. This is especially true in sleeping car rooms having a swingably mounted bed which is movable from a stored position to a position for occupancy. This type of bed requires a certain amount of clearance when moved from one position to the other, and when placed in position for occupancy it takes up most of the available room space. It will thus be seen that the seat used in such rooms must be capable of being cleared by the bed during movement of the latter from one position to the other. In addition, the seat must be of such construction as to be movable to an out-of-the-way position in order not to interfere with the bed when the bed is in position for occupancy, since lack of space prevents use of the bed and seat at the same time. It is an object of the present invention to provide a seat structure capable of meeting the above requirements.

Another object of the invention is the provision of seat structure for sleeping car rooms having a back which is movable upwardly to a raised position and a seat which swings downwardly to lowered position to provide clearance for operation and use of a swingably mounted bed.

A further object of the invention is the provision of a seat structure of the above type provided with mechanism operatively connecting the seat and back whereby movement of the back between its respective positions effects a corresponding movement of the seat from one position to the other.

A still further object of the invention is the provision of seat structure of the character described having releasable means for supporting the seat in horizontal seating position, and means operative upon movement of the back for controlling the releasable means.

These and other objects of the invention will be apparent to those skilled in the art from a study of the following description and accompanying drawings, in which:

Figure 1 is a front elevational view of the seat structure embodying the present invention, the view showing in broken lines the seat in its lowered position and the back in its raised position;

Figure 2 is a sectional view taken on line 2—2 of Figure 1, with part of the control mechanism removed;

2

Figure 3 is a sectional view of the room showing the seat structure in side elevation, the back in partly and fully raised positions and the seat in its lowered position, being shown by broken lines;

Figure 4 is a large scale view showing the releasable means for supporting the seat in horizontal position, and

Figure 5 is a view taken on the line 5—5 of Figure 4.

Referring now to the drawings, the seat structure is shown as installed in a railway sleeping car room having a side wall 2, which is the side wall of the car, a window 4, an aisle wall 6, end wall 8 and floor 10. The room is provided with a closet 12 and shoe compartment 14, formed by the aisle wall and a closet wall 16 extending longitudinally of the room, and closed, respectively, at the front end by doors 18 and 20.

The seat structure comprises a seat 22 hingedly connected at one side, as indicated at 24, to the closet wall 16, and adapted to swing vertically between a horizontal seating position and a lowered position. A seat back 26 is pivotally supported at opposite sides of its upper portion, as indicated at 28, by the side wall 2 and closet wall 16, adjacent the end wall 8. The back is thus mounted to swing in a vertical direction, substantially at right angles to the seat, between a lowered position and a raised or out-of-use position, as shown by full and broken lines, respectively, in Figures 1 and 3. The back may be retained in its raised position by any suitable means, such as straps 30, connected as at 32 to a luggage rack 34 and having loops 35 adapted to engage projections 36 extending from the lower sides of the back.

From the foregoing description it will be seen that the seat and back are separate elements of the seat structure and independently mounted, the seat being hinged to the closet wall on an axis extending lengthwise of the car, while the back is pivotally supported between the closet wall and side wall on an axis extending transversely of the car. It will be understood that the window, and hence the side wall of the car, will be to the left of an occupant of the seat facing in the direction of travel of the car.

The mechanism for supporting the seat in horizontal seating position and for moving it from one position to the other comprises an angle-shaped lever 38 fulcrumed on the end wall 8 on an axis indicated by the line 40. One leg 42 of this fulcrumed lever extends under the seat in supporting engagement with the side of the seat opposite

from the hinge 24. This leg 42 is disposed substantially parallel with the hinge 24 and is retained in supporting engagement with the seat by U-shaped brackets 44 secured to the bottom of the seat. The other leg 46 of the lever extends transversely of the room adjacent the end wall 8 in a direction toward the aisle wall, and is formed with a bifurcated end portion 47. A seat actuating rod 48 is pivotally connected at its upper end, as shown at 50, to the back of the seat back. The lower end portion 52 of this actuating rod 48 is formed with an elongated slot 54 for slidably connecting it with the bifurcated end portion of the fulcrumed lever 38. The lower end portion of the rod 48 is arranged between the bifurcations 47 of the lever 38 and is slidably connected therewith by means of a bolt 56 carried by the bifurcated end and passing through the slot 54. It will thus be seen that there is a lost motion connection between the end portions of the lever 38 and rod 48, they being slidable relative to each other to the extent of the length of the slot 54. The weight of the seat 22, bearing on leg 42 of lever 38 and about the fulcrum 40, exerts a constant upward force against the rod 48 by reason of engagement of the bolt 56 with the top of slot 54. From the description thus far it is believed obvious that upward movement of the back will effect downward movement of the seat, and vice versa, the bolt 56 remaining in contact with the top of slot 54 in actuating rod 48.

The releasable means for the seat comprises a latch member 58 carried by the bifurcated end portion of the fulcrumed lever 38. The latch member is slidably carried within a housing 60 secured by screws 62 to the side of the bifurcated end portion of the lever 38. The latch member is constantly urged toward latching position by a coiled spring 64 within the housing 60 and is retained in such position by its engagement with a latch retainer 66 secured by bolts 68 to the closet wall 16. A latch release arm 70 is pivotally connected at one end, as shown at 72, with the latch member 58. The opposite or lower end 74 of the release arm is formed with a slot 76 through which extends a bolt 78 carried by the lower end portion of the rod 48. In this way the latch release arm has a slidable connection with the lower portion of rod 48 so that upon raising of the seat back, which will lift the rod 48, the release arm will be actuated to release latch member 58. Upon release of the latch member 58, the seat may then be lowered by movement of the back to its fully raised position. To return the seat to its horizontal seating position, the back is lowered, raising the seat to a point where the latch member 58 will encounter and be engaged beneath latch retainer 66. Movement of the back beyond its normal or fully lowered position is prevented by stops 79 secured to the rear portion of the seat 22.

To prevent chattering of the parts when the car is in motion and also to partially counterbalance the weight of the seat, a coiled spring 80 is provided on the rod 48. This spring is arranged between a pin 82 extending through the lower portion of the rod and an abutment 84 slidably associated with the rod and bearing against the bifurcated end portion of lever 38. The spring is under compression when the parts are in normal or seat supporting position, being of such strength as to exert a slight force in counterbalancing the weight of the seat. It will be seen that the spring, being normally compressed between the pin 82 and abutment 84, will act to ease operation of the back during the first part of its movement to raised position. The latch member 58 will not be released until the back has reached an intermediate position, as indicated by broken lines in Fig. 3, during its movement to raised position. It will also be noted that it is necessary for the back, during its movement to lowered position, to reach this intermediate position before the latch member 58 again engages latch retainer 66, further movement of the back toward fully lowered position merely compressing the spring 80. It will thus be seen that a safety factor is provided, assuring that the mechanism is firmly latched in seat supporting position when the back is in its normal or fully lowered position.

The car room is provided with a bed 86, shown in Figure 1 by full lines when in stored position, a portion of the back 26 being cut away as indicated at 87 to provide space for the bed. The bed is swingably mounted on roller assemblies 88 and 90, provided at each end of the bed and riding, respectively, in vertical guide tracks 92 and horizontal guide tracks 94. The bed is movable from its stored position to a position for occupancy, as shown by broken lines in Figure 1, the clearance limits required for movement of the bed being defined by the curved broken line 96. The gap between wall 2 and the bed 86 when in its stored position is bridged by the foldable section 98 of window ledge 100. It will be seen from a study of Figure 1 that the clearance required for operation of the bed from one position to the other intersects the space normally occupied by the seat and back, but that the seat when in its lowered position and the back in its raised position will be cleared by the bed.

While the invention has been described more or less in detail, it will be apparent to those skilled in the art that various modifications may be made without departing from the scope of the invention as defined in the following claims.

What is claimed is:

1. In a seat structure for a room having angularly disposed walls, a seat hinged at one side to one of said walls and adapted to swing in a vertical direction, an angle-shaped lever fulcrumed on the other of said walls having one leg thereof in supporting engagement with the opposite side of said seat and movable therewith, latch means carried by the other leg of said lever, and a latch retainer secured to said first-named wall and engageable by said latch means for releasably retaining said lever in horizontal seat supporting position.

2. A seat structure for a room having spaced side walls, comprising a seat hinged to one of said walls and adapted to swing vertically between horizontal seating position and lowered position, a back pivotally supported by said walls on an axis at right angles to the seat axis and movable between lowered position and raised position, and means operatively connecting said seat and said back whereby movement of the back between its respective positions will cause a corresponding and substantially simultaneous movement of said seat between its positions.

3. A seat structure for a room having spaced side walls, comprising a seat hinged to one of said walls and adapted to swing vertically between horizontal seating position and lowered position, a back pivotally supported at its upper portion by said walls and movable between lowered and raised position, and means operatively connecting said seat and said back whereby when

said back is moved in either direction said seat is moved in an opposite direction.

4. A seat structure for a room having side walls and an end wall, comprising a seat hinged to one of said side walls and adapted to swing vertically, means fulcrumed on said end wall in supporting engagement with said seat and swingable therewith, a back pivotally supported at its upper portion by said side walls adjacent said end wall and movable between lowered position and raised position, and means connecting said back with said fulcrumed means and operative upon movement of said back in either direction to move said seat in the opposite direction.

5. In a seat structure for a room having side walls and an end wall, a seat hinged to one of said side walls and adapted to swing vertically, releasable means fulcrumed on said end wall for supporting said seat in horizontal seating position, a back pivotally supported at its upper portion by said side walls, the lower portion of said back being movable between lowered and raised positions, and means connected to said back for controlling said releasable means.

6. In a seat structure for a room having side walls and an end wall, a seat hinged to one of said side walls and adapted to swing vertically, means fulcrumed on said end wall in supporting engagement with said seat and swingable therewith, releasable means for retaining said fulcrumed means in horizontal seat supporting position, a back pivotally supported by said side walls and movable between lowered and raised positions, and means connecting said back with said fulcrumed and releasable means operative upon movement of said back between its respective positions to control said releasable means and to move said seat from and to seating position.

7. In a seat structure for a room having side walls and an end wall, a seat hinged at one side to one of said side walls and adapted to swing vertically between horizontal and lowered positions, an angle-shaped lever fulcrumed on said end wall with one leg arranged beneath the other side of said seat to support the seat in horizontal position, a latch retainer on said side wall, latch means carried by the other leg of said lever

engageable with the latch retainer to releasably hold the lever in position to support said seat, a back pivotally supported by said side walls and swingable between lowered and raised positions, and means connecting said back with the lever so arranged as to be operative upon swinging of the back from one position to the other to actuate said latch means and to swing said seat to and from its horizontal and lowered positions.

8. In a seat structure for a room having side walls and an end wall, a seat hinged to one of said side walls and adapted to swing between horizontal and lowered positions, a back pivotally supported at its upper portion by said side walls to swing between lowered and raised positions, means fulcrumed on said end wall and so arranged as to support the seat in horizontal position, a latch retainer on said first-named side wall, latch means carried by said fulcrumed means engageable with the latch retainer to releasably hold the fulcrumed means in position to support the seat, a rod having a pivotal connection at one end with the back and a lost motion connection at its opposite end with said fulcrumed means, and latch release mechanism carried by said fulcrumed means operative upon relative movement between the rod and fulcrumed means when said back is swung toward its raised position.

WILLIAM E. BURNETT.

REFERENCES CITED

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

UNITED STATES PATENTS

Number	Name	Date
251,489	Ware	Dec. 27, 1881
511,533	Lard	Dec. 26, 1893
515,093	Sekyra	Feb. 20, 1894
515,686	Hyller	Feb. 27, 1894
1,253,549	Weaver	Jan. 15, 1918
2,216,243	Kreidler	Oct. 1, 1940
2,229,608	Rapdale et al.	Jan. 21, 1941

FOREIGN PATENTS

Number	Country	Date
188,353	Great Britain	Nov. 6, 1922