May 9, 1944. R. H. O'NEILL 2,348,407

CONVERTIBLE SLEEPING UNIT

Filed Oct. 28, 1940 3 Sheets-Sheet 1

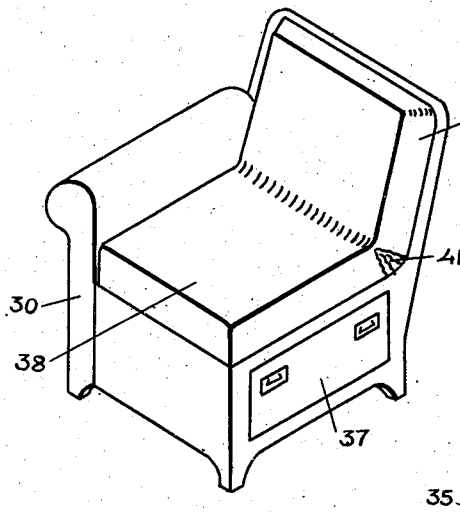


Fig. 1.

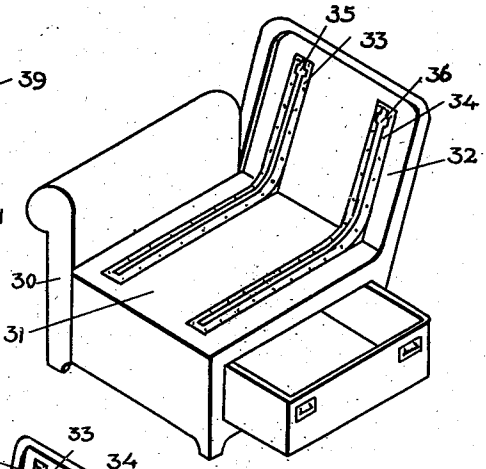


Fig. 2

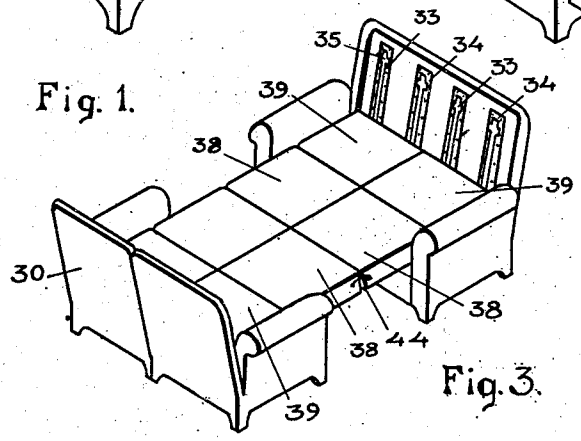


Fig. 3.

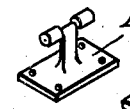


Fig. 6.

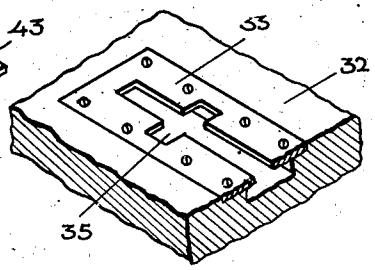


Fig. 5.

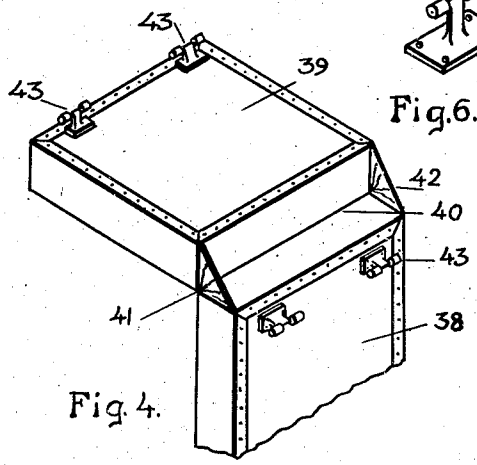


Fig. 4.

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CONVERTIBLE SLEEPING UNIT

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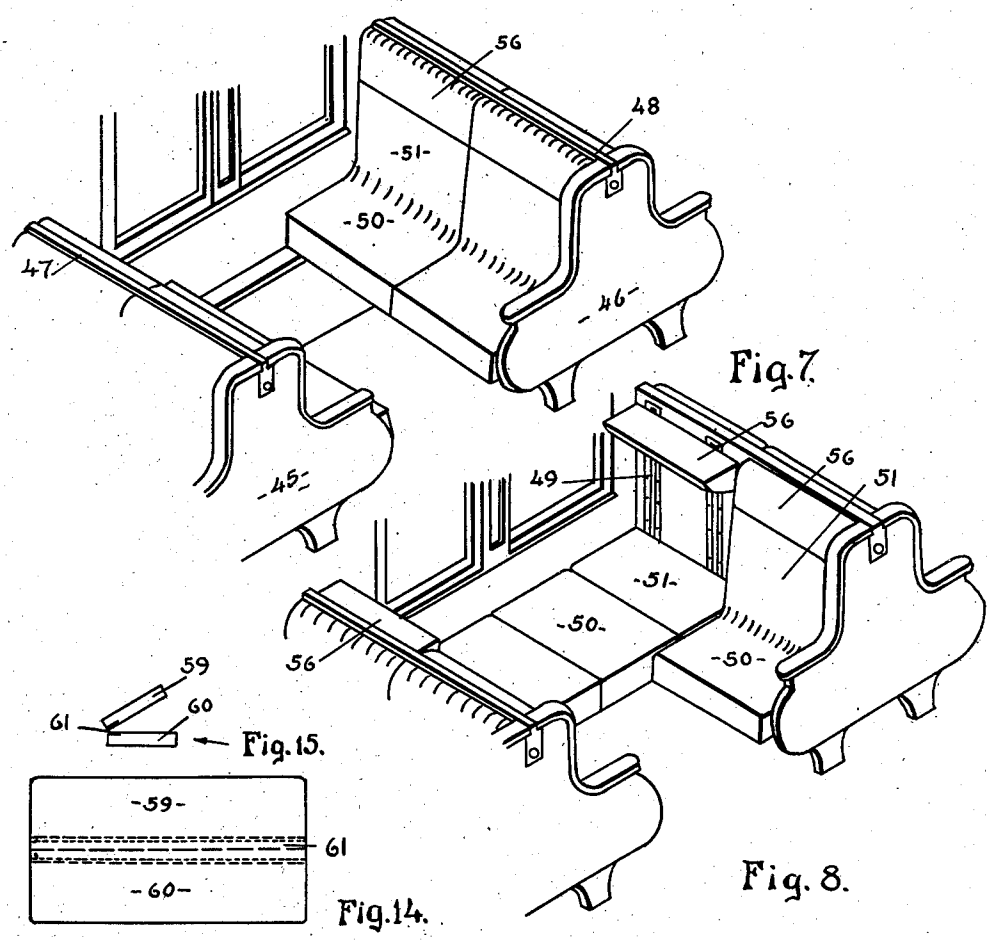


Fig. 7.

Fig. 8.

Fig. 15.

Fig. 14.

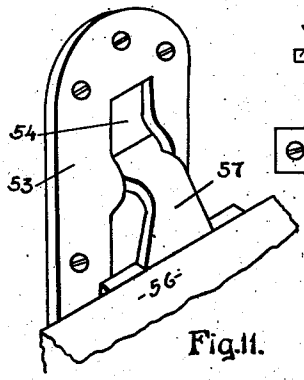


Fig. 11.

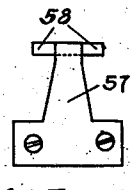


Fig. 12.

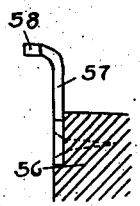


Fig. 13.

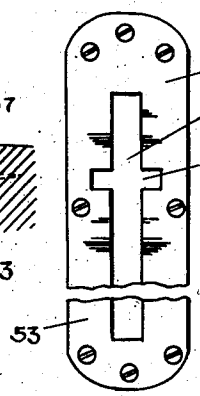


Fig. 10.

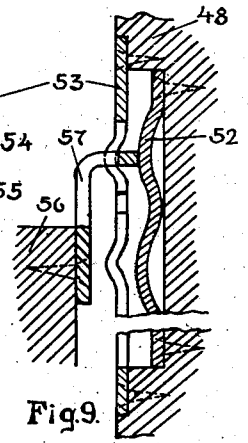


Fig. 9.

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CONVERTIBLE SLEEPING UNIT

Filed Oct. 28, 1940 3 Sheets-Sheet 3

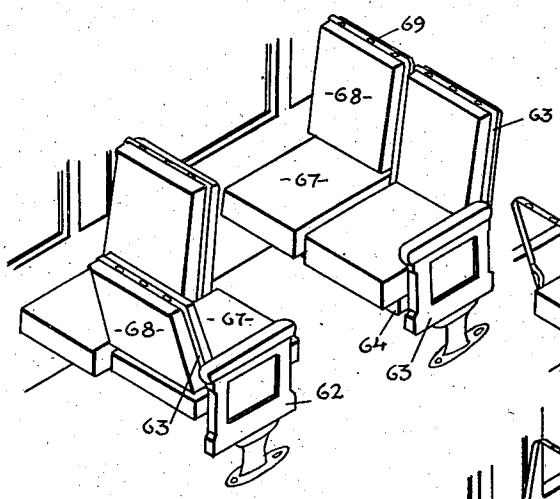


Fig. 16.

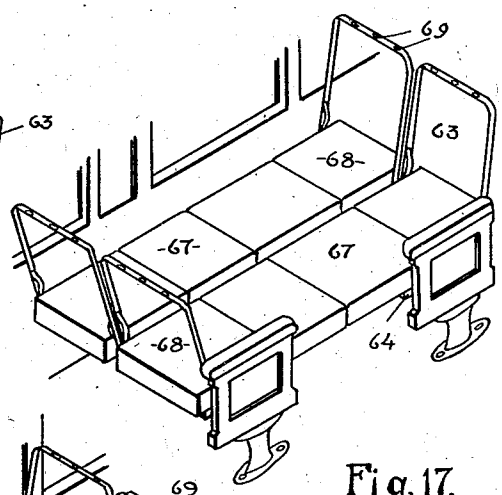


Fig. 17.

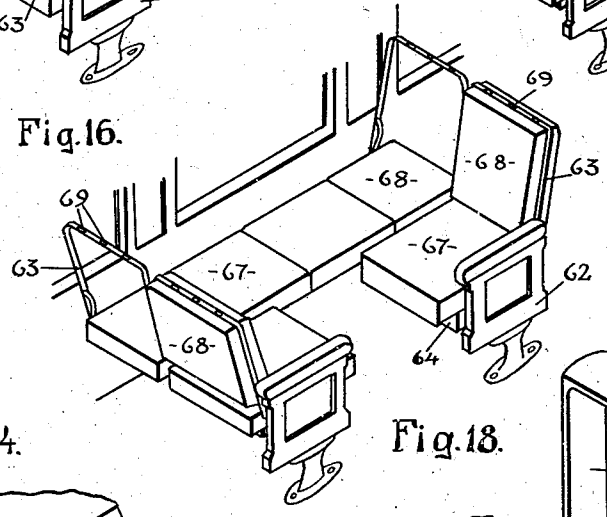


Fig. 24.

Fig. 18.

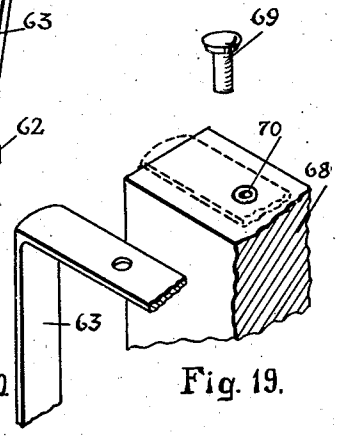


Fig. 20.

Fig. 19.

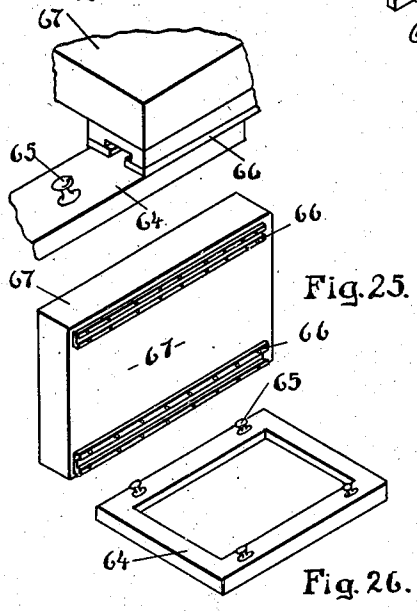


Fig. 25.

Fig. 26.

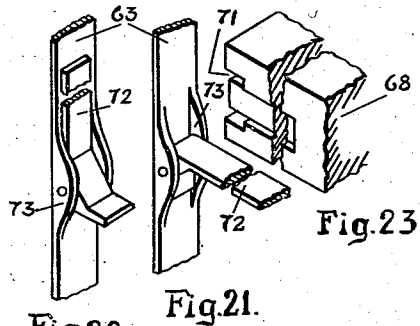


Fig. 23.

Fig. 22.

Fig. 21.

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Patented May 9, 1944 2,348,407

UNITED STATES PATENT OFFICE

2,348,407

CONVERTIBLE SLEEPING UNIT

Ralph Hender O'Neill, Dartmouth, Nova Scotia, Canada

Application October 28, 1940, Serial No. 363,074

1 Claim. (Cl. 155—6)

The invention relates to convertible sleeping units, as described in the present specification and illustrated in the accompanying drawings that form part of the same.

The invention consists essentially of the novel features of construction, as pointed out broadly and specifically in the claims for novelty following a description in detail of an acceptable form of the invention.

The objects of the invention are to devise certain pieces of furniture which ordinarily will be used as seats and that may be combined to form a bed or other sleeping unit, and consequently furniture of this type will be of estimable value in dwellings, particularly in small apartments, as well as being capable of being used in passenger conveyances, such as auto buses, railway cars, air transports, motor boats, and in large ships; to construct a sleeping unit that will be attractive in appearance, and will have no resemblance to any portion of a bed when the units are used as ordinary seats or couches; to device a sleeping unit that may be formed as seats or converted as a bed, or as the combination of seats and a couch in accordance with the desire of the users of the sleeping units; to furnish a quick and easy method of converting the units into the form desired; to insure the maximum of comfort within the minimum of space to the users of the units, and which will be of especially great value in passenger conveyances, such as in railway cars and enabling the occupants of the seats to have all the luxuries of a larger compartment in that they may use their seats as a lounge or bed, and consequently expedite their dressing and undressing operations by affording room beside the bed without the necessity of using the isle of the railway car, and generally to provide a sleeping unit that will be economical to manufacture, durable in construction, and efficient for its various purposes.

In the drawings,

Figure 1 is a perspective view of the unit.

Figure 2 is a perspective view of the unit having the cushions removed.

Figure 3 is a perspective view of a plurality of sleeping units converted into a bed.

Figure 4 is an enlarged fragmentary perspective view of a cushion assembly.

Figure 5 is an enlarged perspective fragmentary view showing a portion of one of the channel members of the unit.

Figure 6 is an enlarged perspective detail of the cushion runner.

Figure 7 is a perspective view of a convertible sleeping unit as utilized in a railway car.

Figure 8 is a fragmentary perspective view as shown in Figure 7 converted into the combination of a lounge and seats.

Figure 9 is a vertical sectional view of a seat back and head rest assembly.

Figure 10 is a fragmentary plan view of a retaining plate for the head rest.

Figure 11 is an enlarged fragmentary perspective detail of the retaining plate and hanger for the head rest.

Figure 12 is a detail of the hanger.

Figure 13 is a fragmentary detail of a hanger and head rest.

Figure 14 is a plan view of the folding mattress.

Figure 15 is an end view of the folding mattress.

Figure 16 is a perspective view of the units as constructed for passenger conveyances, and of the tilting back.

Figure 17 is a perspective view of the units as shown in Figure 16, converted into a bed.

Figure 18 is a perspective view of the units as shown as converted into a lounge and seats.

Figure 19 is an enlarged fragmentary perspective view of the corner of one of the back cushions disclosing an acceptable way of fastening the same to the tilting frame.

Figure 20 is an enlarged perspective fragmentary detail of a corner of one of the tilting frames.

Figure 21 is an enlarged fragmentary perspective detail showing an acceptable method for supporting the bottom of the back cushion.

Figure 22 is an enlarged fragmentary perspective detail showing the supporting means in its inoperative position.

Figure 23 is an enlarged fragmentary detail of the bottom of the back cushion.

Figure 24 is an enlarged fragmentary perspective view showing an acceptable adjusting means for regulating the position of the bottom cushion in respect to the stationary frame of the unit.

Figure 25 is an enlarged perspective view of one of the horizontal cushions.

Figure 26 is an enlarged perspective view showing the stationary frame of the unit.

Like numerals of reference indicate corresponding parts in the various figures.

The convertible sleeping units are formed essentially of a combination of one or more chairs especially constructed which may be converted into a bed or couch when co-operating with one another, or which may be a combination of several chairs and a couch, which when co-operated together may form a double bed. The

same system is used in passenger conveyances with slight modifications in accordance with the type of vehicle in which these units are to be installed; and more particularly referring to the drawings, the unit as shown in Figures 1 and 2 are in the form of chairs as indicated by the numeral 30. The chair is provided with the usual frame 31 and back 32, and the channel members 33 and 34 are secured to the frame and back and are parallel to one another, and provided with key-ways 35 and 36. The chair may or may not be provided with a drawer 37 for the purpose of containing bedding or other commodities.

The horizontal cushion 38 and the back cushion 39 are hingedly secured together at 40, and are provided with the hinged flaps 41 and 42 for the purpose of concealing from view the space that would ordinarily be seen in certain positions of the cushions. The horizontal cushion and the back cushion are provided with runners 43 on their under-side, and these runners are adapted to engage with the key-ways 35 and 36 of the channel members, and in this way it will be seen that the cushions may be changed from a seat assembly to a horizontal position for co-operation with another unit or chair similarly constructed to complete a lounge, and the outer ends of the adjacent horizontal cushions in two such units may be secured together by means of the fastening members 44.

In Figure 3 there is shown an assembly of two chairs and a settee, each constructed as hereinbefore described, and these are assembled together to make a bed, and it will therefore be seen that the convertible sliding units as above described are especially adapted as pieces of furniture in households and other dwellings, particularly where it is desired to provide a maximum of comfort within the minimum of space.

In Figure 7 the convertible sleeping units are similarly constructed as shown in Figures 1, 2, and 3, but in this case they are slightly modified to adapt them for use in railway sleeping cars. The seat frames 45 and 46 are provided with the fixed backs 47 and 48, and have the channel members 49, which are similarly constructed as the channel members for the frames shown in Figures 1, 2, and 3. The cushions form independent seats from one another, that is to say on each seat frame, such as the frame 45 and the accompanying fixed back 47 there are provided a double set of hinged back cushions 50 and 51 constructed similarly to the cushions described in Figures 1, 2, and 3, and are also provided with runners for engagement with the channel members 49. In this way it will be seen that if it is desired to form the seats in a combination of chair and lounge compartment, all that is necessary is to simply slide the cushions in one side towards one another to form the lounge, leaving the other two opposing cushions as they were to form seats. Of course if a regular bed is to be made, then the remaining seats are of course converted into a lounge, and the two lounges complete the bed.

For the purpose of adding further luxury to the compartments described, the fixed backs 47 and 48 are provided with recesses containing a spring 52 and a retaining plate 53 having channel members 54 provided with keyways 55. The head rests 56 are secured to hangers 57 having lugs 58 adapted to be introduced in the keyways 55 for the engagement of the hanger with the channel members 54, and the purpose of the springs within the recesses of the seat backs is that when the headrest is in its un-operative position, the projection of the hangers within the channel members will be in direct contact with the springs. If it is desired to change the position of the headrest to a horizontal position, the position of the spring in relation to the hangers is reversed, in that the spring abutts a portion of the hangers so as to hold the headrest in position.

When the sleeping units, as shown in Figure 7, are to be converted into a bed, an acceptable type is illustrated in Figures 14 and 15, which discloses a pair of mattresses 59 and 60 which are hingedly secured together by a strip of canvas or other suitable material 61 so that the mattress can be quickly folded when it is desired to change the bed into a lounge so as to enable the occupants to have more freedom within the compartment for dressing or other purposes.

In Figures 16 and 17 the convertible units are shown as an acceptable method of construction for use in auto buses, or air transports, and in this case the general assembly is similar to that as previously described, with the exception that the chairs 62 are provided with tilting back frames 63, and in this case the chairs have the horizontal frames 64 with the projecting studs 65 which are adapted to be engaged by the channel members 66, situated on the underside of the horizontal cushions 67. The back cushions 68 are detachably secured to the backframe 63 by means of metal pins 69 engaging with the sockets 70 formed in the horizontal bar of the back frame and in the cushion itself, while the bottom side of the back cushion has a slot 71, which is adapted to engage with the tiltable supporting member 72 which is hingedly secured to the bracket 73 formed in the lower portion of the vertical members of the back frame 63, this being one acceptable way for holding the cushion.

It will be seen that in this particular modified structure, various positions of the convertible sleeping units may be accomplished similar to those already described in the other acceptable forms, and it will be noted that the convertible units are capable of being used in different methods, such as pieces of furniture in dwellings, and as units in passenger conveyances, either with permanent fixed backs or with tiltable backs, all without departing from the essential features of the invention.

What I claim is:

In convertible sleeping units, a pair of individual seats adapted to be placed in a vis-a-vis arrangement with one another, each seat having a solid bottom wall and a solid back rest, said back rest being shorter in height than the length of said bottom wall, parallel channel members secured to said solid back rest and bottom wall and suitably spaced from the side edges thereof and having key-ways formed in their uppermost ends and forming stops at their extreme ends, a bottom cushion and a back cushion secured together by hinged flaps, a pair of runners secured to the underside and at the free end of said back cushion, a pair of runners secured to the underside and at the hinged end of said bottom cushion, said runners adapted to engage with said channel members and regulated as to length of travel by the stops formed at the extreme ends of said channel members.

RALPH HENDER O'NEILL.