Nov. 4, 1947. O. A. BARTHOLOMEW 2,430,324

DOUBLE DECK TROLLEY COACH

Filed Dec. 8, 1944 3 Sheets-Sheet 1

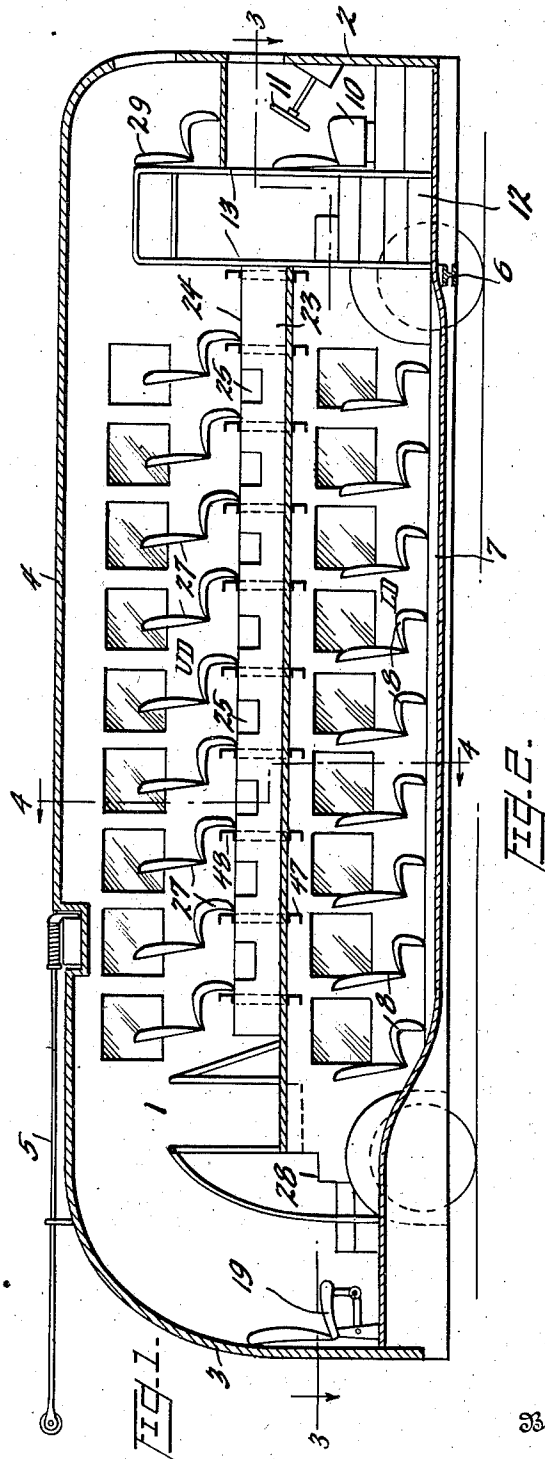


FIG. 1.

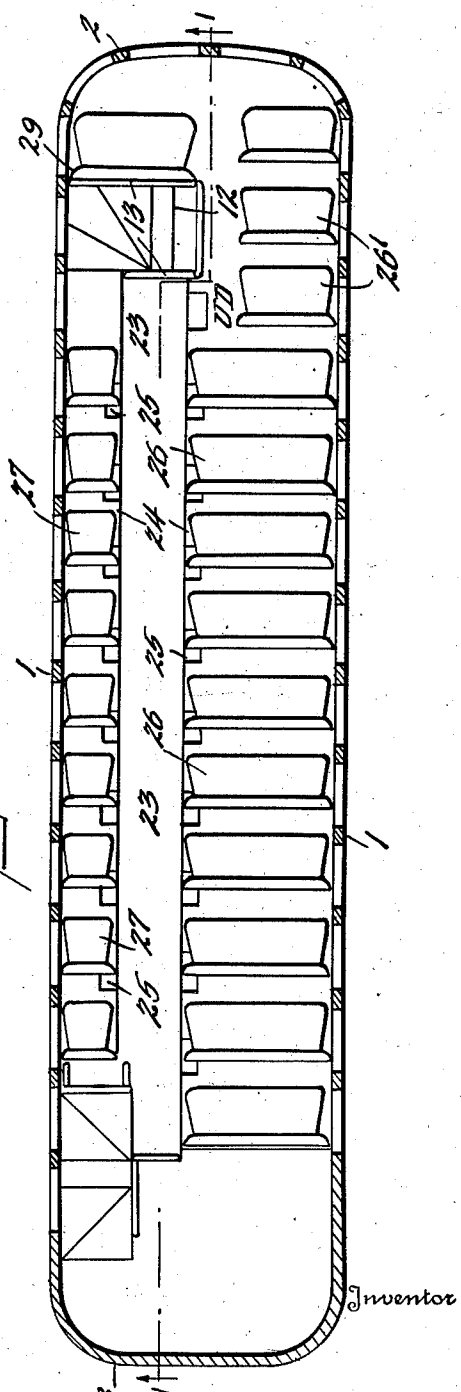


FIG. 2.

Inventor

By Otto A. Bartholomew,
Parker Cook Attorneys

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DOUBLE DECK TROLLEY COACH

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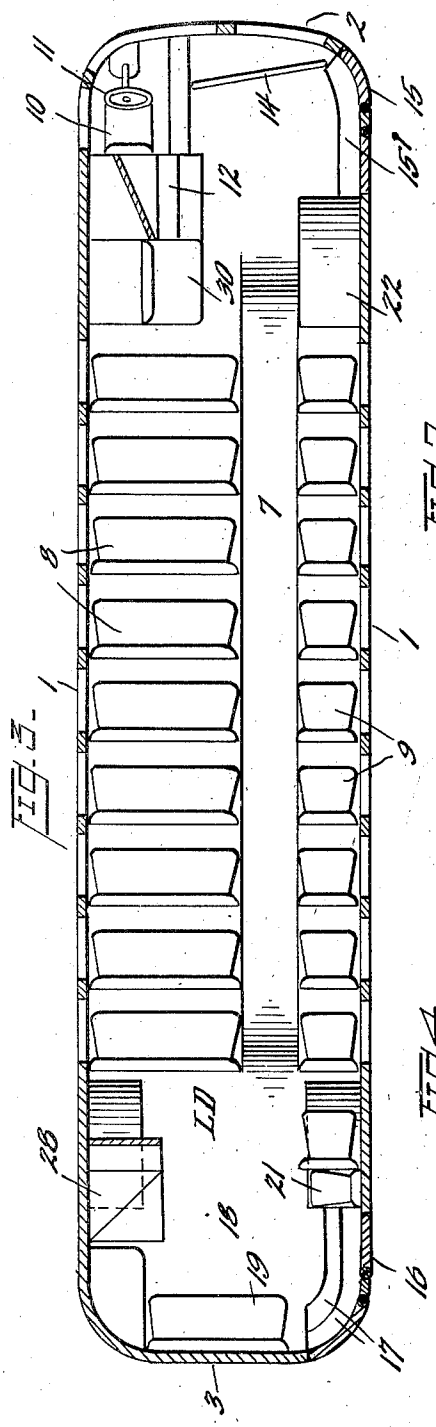


FIG. 3.

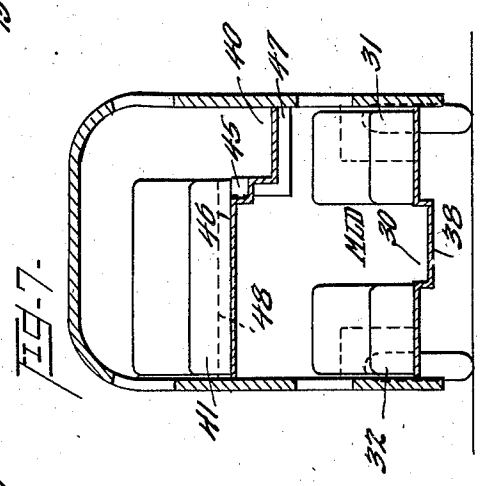


FIG. 7.

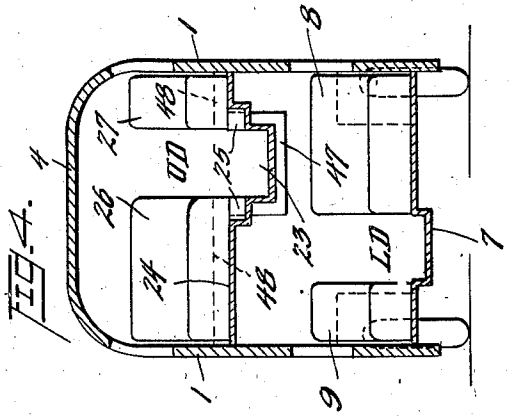


FIG. 4.

Inventor

Orlo A. Bartholomew,

By Parker Cook

Attorney

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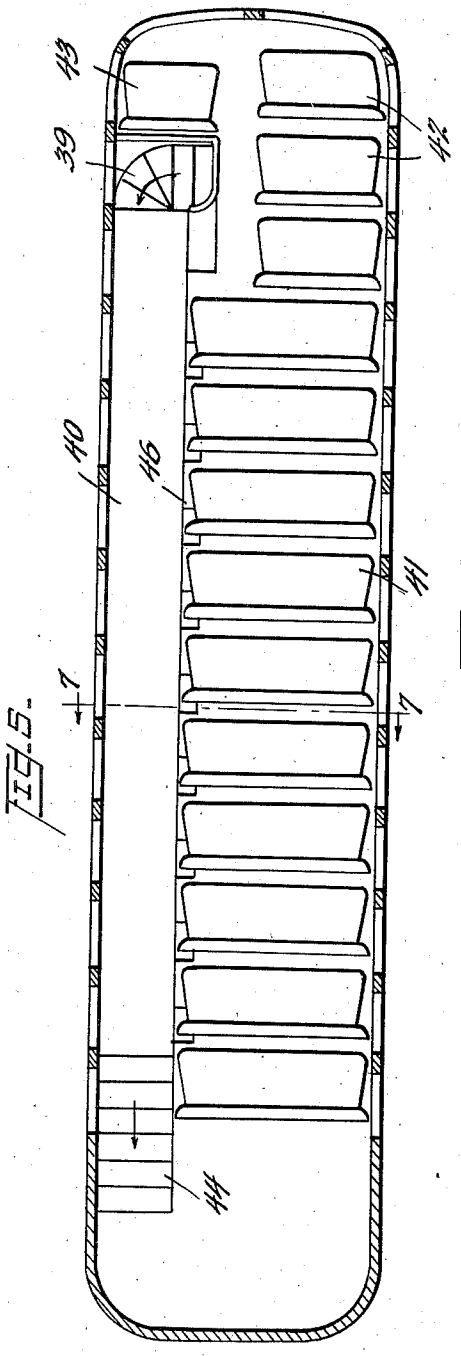


FIG. 5.

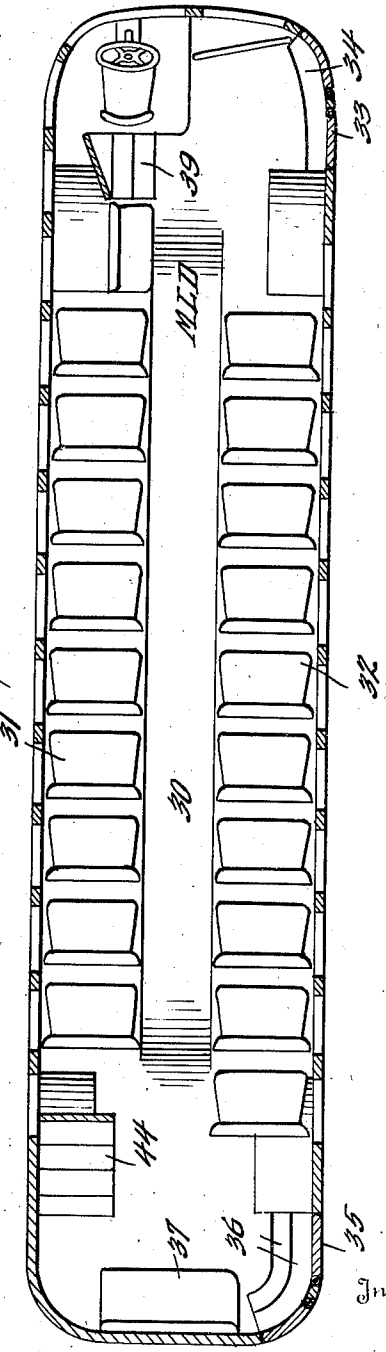


FIG. 6.

Inventor

Orlo A. Bartholomew,

By Parker Cook Attorney

Patented Nov. 4, 1947

2,430,324

UNITED STATES PATENT OFFICE

2,430,324

DOUBLE-DECK TROLLEY COACH

Orlo A. Bartholomew, Atlantic City, N. J.

Application December 8, 1944, Serial No. 567,301

2 Claims. (Cl. 296—28)

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My invention relates to new and useful improvements in a trolley coach and more particularly to a double deck trolley coach wherein the seat and aisle arrangement of the two decks permits of a more even distribution of the weight or load than is found in the more common type of double deck coaches or buses in use today.

Still another object of the invention is to provide a trolley coach whose overall height will permit the coach to run through the existing subways, tunnels, under the underpasses and under the bridges and under the trolley wires now in existence and at the same time have its aisles so arranged that the passengers in the aisles will have a maximum amount of head room.

Still another object of the invention is to provide a double deck vehicle with a relatively low center of gravity so that the vehicle may travel at relatively high speeds without discomfort or danger to the passengers.

Still another object of the invention is to provide a double deck vehicle wherein the seating and aisle arrangement of the two decks is such that there will be a maximum of head room for the passengers as they enter the coach and walk along the aisle of either the upper or lower decks.

Still another object of the invention is to so arrange the aisles and seating space that where there is a multiplicity of passengers on the one deck to one side of the coach, the conditions are just reversed on the other deck, thus evenly distributing the weight of the passengers with respect to the two decks.

Still another object of the invention is to provide a double deck trolley having staggered aisles, that is—aisle on the one deck being staggered with relation to the aisle on the other deck.

Still another object of the invention is to provide a slightly modified form of coach wherein the one deck may be provided with a center aisle to evenly distribute the weight of the passengers while the other deck will have a relatively narrow aisle down its one side so that even though the weight is not as well distributed as in the preferred form, still the arrangement is such that the weight falls well within the wheel base to thus provide a safe and comfortable driving vehicle.

Still another object of the invention is to provide a trolley coach with the aisle on the upper deck staggered with relation to the aisle on the lower deck and to so arrange the seats on the decks that the vehicle will carry a maximum number of passengers.

Still another object of the invention is to provide a double deck trolley coach or the like wherein the aisle on the lower deck is sunken slightly below the floor level to thus provide a maximum of head room for those entering and leaving the aisle. Likewise, the aisle of the upper deck is in

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a plane below that of the seats so that here again there will be a maximum of head room for the passengers using the upper deck.

Still another object of the invention is to provide a double deck vehicle wherein the passengers enter the forward end where they may choose either the upper or lower deck and wherein also the passengers may leave the coach from a rear stairway from the upper deck or from the rear steps at the rear of the first or lower deck.

With these and other objects in view the invention consists in certain new and novel arrangements and combination of parts as will be hereinafter more fully described and pointed out in the claims.

Referring now to the drawings showing the preferred form and one modification:

Fig. 1 is a vertical longitudinal sectional view of the double deck trolley coach showing the preferred form;

Fig. 2 is a horizontal sectional view showing the upper deck;

Fig. 3 is a horizontal sectional view taken on line 3—3 of Fig. 1 showing the lower deck;

Fig. 4 is a vertical sectional view taken on line 4—4 of Fig. 2;

Fig. 5 is a horizontal sectional view showing the modified form of upper deck;

Fig. 6 is a similar view showing the modified form of the lower deck; and

Fig. 7 is a vertical sectional view of the modification taken on line 7—7 of Fig. 5.

Referring now more particularly to the several views and especially to Figs. 1–4 showing the preferred embodiment;

It will be seen that the vehicle follows a conventional outline and although the dimensions of course may be varied, a few of the dimensions are set out so that the arrangements of the staggered aisles, seats, and head room of the aisles may be better appreciated. The length may be approximately forty feet (40′) and the overall width dimension about eight feet ten inches (8′ 10″) while the height overall should be substantially twelve and one half feet (12½′).

By building the double deck coach with these outside dimensions and by building the aisles for the two decks as will be shortly described, it permits of a substantial six feet four inches (6′ 4″) clearance for the passengers traversing the several aisles.

It will be understood at the outset that I have not shown all the windows but these will extend along the opposite sides of the trolley as illustrated by the several that are detailed.

Furthermore, I have not shown the prime mover which in a trolley coach will be electric motors but it will be understood that the aisles and seating arrangement can also be carried out in a gasoline propelled coach.

As may be seen in Fig. 1, there are suitable side walls 1, the front wall 2, and the downwardly sloping rear wall 3 joined by the roof 4 and on the latter will be supported the trolley pole 5. There may also be seen the underslung front axle 6 which should give a road clearance of substantially nine and one half inches (9½''). The underslung axle makes possible a low center of gravity and provides more head room for the front doors as well as the floors of the aisles about to be described.

Lower deck

Glancing at Figs. 1 and 4 for the moment, there will be seen the upper deck UD and the lower deck LD.

Extending longitudinally of the lower deck may be seen the sunken or lowered aisle 7 which in Fig. 4 it will be noticed, appears to the left of an imaginary vertical line drawn centrally through the coach and, here again, a dimension might be given for the sake of clearness.

I find that if I make the aisle substantially two feet three inches (2' 3'') in width it provides plenty of room for the passengers in the aisle to select their seats or leave same. It also permits of a seat substantially four feet six inches (4' 6'') in width on the one side, wide enough for three passengers and a seat wide enough to hold a single passenger on the opposite side of the aisle.

As may be seen also in Figs. 1 and 4, the aisle 7 is lowered slightly with respect to the normal surface of the lower deck and this permits a six feet four inch (6' 4'') clearance between the floor of the aisle 7 and the undersurface of the upper deck UD.

There will be noticed a row of seats 8 extending substantially throughout the length of the lower deck and these seats will conveniently hold three passengers. On the opposite side of the aisle 7 will be the row of single seats 9.

In the forward end of the trolley coach as seen in Figs. 1 and 3, there may be seen the driver's seat 10 which is elevated from one floor and there may be seen the steering wheel 11. Also, there may be seen the plurality of steps 12 that lead from the far side of the aisle (Fig. 3) to the upper deck UD.

Also, there may be seen the hand rails 13 that are on the opposite sides of the stairway or steps, and a hand rail 14 to keep the passengers from crowding on the side of the driver so that he can have a clear vision of the street or highway.

In Fig. 3 there may be seen the forward door 15 and its step 15' and to the rear on the same side may be seen the rear door or safety door 16 and its step 17.

It will be noticed that I run the row of single seats somewhat to the rear of the row of double seats thereby leaving more space 18 for the passengers to gather and pass out of the door 16.

At the direct rear of the coach may be seen the folding seat 19 which could be occupied when the coach is full and swung up out of the way during the unloading of the passengers if desired.

In like manner there may be seen the folding seat 30 in the forward end of the coach and, if desired, another folding seat may be situated in the rear as in 21 at the end of the row of single seats.

It will be noticed that the row of seats 9 start just behind the wheel guard 22 and at a point just opposite the beginning of the row of triple seats 8 which starts just behind the wheel guard and the stairway.

By arranging the lower deck as shown, the passengers can sit in broken rows of four, that is, three on one side of the aisle and one on the other, and additional swinging folding seats are provided wherever they can be conveniently situated. Thus, a relatively large number of passengers can be conveniently carried on the lower deck and still have enough aisle room to make it convenient for the ingress and egress of the passengers.

Upper deck

Referring now to Figs. 1, 2, and 4, there will be seen the upper deck with its staggered aisle 23, that is, staggered with relation to the aisle 7, this being to the right of an imaginary vertical line drawn centrally through the coach in Fig. 4.

It will be seen that the aisle is sunken with respect to the normal floor level 24 of the upper deck. It will also be noticed that in front of each seat is the step 25 so that the passengers may conveniently step from the sunken aisle onto the step 25 and then to the floor 24, and then locate a seat in the triple seats 26 or, step up one step from the aisle to occupy a single seat in the row 27. As heretofore mentioned, there are steps 12 that lead to this upper deck UD and likewise there are the rear steps 28 that lead down to the rear portion of the lower deck.

It might be mentioned in passing that the head room from the sunken aisle 23 to the top of the roof 4 is approximately six feet four inches (6'4'') so that for the ordinary height passengers there is plenty of head room while walking along the upper aisle; also if the seats are full, it provides head room for the standees.

On the upper deck there may also be a few additional double seats 26' in front of the triple seats and likewise there may be a double or triple seat 26 just above the driver's seat 10. In this way, all the floor space may be utilized for seating the passengers.

From Fig. 4 it will be seen that the weight of the passengers is well distributed, as over the lower aisle 7 and the single row of seats 9, will be the triple seats 26 of the upper deck, while over the triple seats 8 of the lower deck will be the row of single seats 27 and the aisle 23.

Thus, by staggering the aisles and the seating arrangement as just disclosed, when the coach is loaded, the weight on the upper deck is well distributed with respect to the weight on the lower deck and the danger of being top heavy or tipping is reduced to a minimum. Furthermore, it will be seen that by lowering the aisles there is plenty of head room for passengers entering and leaving the coach through the doors and while walking through the aisles, and there is also plenty of head room for the seated passengers.

Finally, the floor space on both the upper and lower decks is arranged to provide for carrying a maximum number of passengers.

Modification

Referring now to Figs. 5, 6, and 7, there is shown a slight modification and although the weight of the passengers is not as evenly distributed as in the preferred form, still here again, the aisles are staggered and the slight preponderance of weight to the one side does not materially affect the safety or the comfort of the passengers.

Broadly stated, the modified form consists in placing the aisle in the lower deck longitudinally centrally of the coach so that there will be double seats on each side of the aisle, while in the upper deck there will be a row of quadruple seats and

an aisle over the two rows of double seats. The upper deck will not have a single row of passengers down its one side of the coach but underneath this aisle there will be the row of double seats so that the little difference in the distribution of weight does not detract from its safety or comfort.

The head room for the passengers will be the same and the easy ingress and egress of the passengers may be accomplished with the same results as in the preferred form.

Referring briefly but more specifically to the modified form and for the moment to Fig. 6, there is shown the modified lower deck MLD with the central aisle **30** and the row of double seats **31** to the far side of the aisle and the row of double seats **32** on the near side of the aisle. The doors **33** and their steps **34** will be just the same as in the preferred form. Likewise, there are the rear doors **35** and their steps **36** and the rear cross seat **37**. This aisle **30** is also sunken as may be seen in **38**.

In other words, instead of having a row of seats holding three passengers on one side of the coach and then an aisle and then a row of single seats as in the preferred form, the aisle is formed longitudinally centrally in the coach and there is a double row of double seats extending throughout the length of the aisle.

Now, referring to the modified upper deck as seen in Fig. 5, here we have the steps **39** leading to the upper deck and we have the aisle **40** extending the length of the coach. Also, there may be seen the row of seats **41** that hold four passengers, and in front of this row of seats **41** may be seen the additional seats **42** and the front seat **43**. Also, there are the rear steps **44** similar to the preferred form. There may also be a step **45** from the aisle to the normal floor level **46** of this upper deck so that the passengers can easily step from the aisle onto the step and then find their seats on the floor level.

Thus, it will be seen that here again, arrangements have been made for a full capacity coach and wherein the weight is so distributed that the coach will not be top heavy. Although there is not quite the equal distribution in weight as in the preferred form, still the difference is so slight that the coach may be driven at a high rate of speed without discomfort to the passengers.

Also, it will be understood in both forms that the portions of the transverse channels or I beams **47** (see Figs. 1, 4 and 7) that brace the respective floors **23** and **40** of the aisles are positioned directly above the backs of the seats on the lower deck so that when the passengers are sitting down their heads will be in front of the respective channels or I beams. However, the remaining portions **48** of the channels or I beams that brace the floors of the upper decks are placed under the respective upper deck seats and have the floors tied to them to thus give as much headroom over the seats as possible.

From the foregoing it will be seen that I have provided a trolley coach that will hold a maximum number of passengers and permit of a quick loading and unloading. Also, there is plenty of head room for those using the aisles in both the upper and lower decks, and at the same time the weight of the upper deck is well distributed with respect to the weight on the lower deck.

Finally, it will be seen that if passengers do have to stand in the aisles, there will be plenty of head room so they will not have to ride in a stooped-over position. Furthermore, the coach is not so high but it may pass under the ordinary underpasses or tunnels.

The entire weight or gross weight of the coach is so distributed that the coach may travel the highways without in any way being dangerous as the center of gravity is relatively low.

Many slight changes might be made such as leaving out some of the seats or adding others or changing other minor details without in any way departing from the spirit and scope of the invention.

Having thus described the same, what I claim as new and desire to secure by Letters Patent is:

1. In a double deck trolley coach, an upper deck, a lower deck, a sunken aisle in the lower deck and seats arranged along the aisle, a sunken aisle in the upper deck and in staggered relation with the aisle of the lower deck, seats on the upper deck extending over the aisle of the lower deck to thus well distribute the weight of the passengers; and transverse supporting beams extending from one side of the coach partly over the upper deck and then extending down through said deck and under said sunken aisle and again upwardly through and along the floor to the other side of the coach to thereby support the upper deck and sunken aisle.

2. In a double deck trolley coach including side walls, underslung axles, a lower deck having a sunken aisle extending substantially in the same horizontal plane as the underslung axles, rows of seats extending along the sides of the aisle; an upper deck, a sunken aisle formed in the upper deck and the said sunken aisle in the upper deck positioned to one side of a vertical plane passing through the center of the lower aisle, seats arranged along the said upper aisle, transverse supporting beams extending from one side wall and positioned partly over the upper deck and then extending down through said deck and under said sunken aisle and again upwardly through and along the floor to the other side wall to thereby support the upper deck and its sunken aisle.

ORLO A. BARTHOLOMEW.

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