B. MACFADDEN.

DOUBLE-DECKED CAR.

APPLICATION FILED APR. 14, 1915.

1,196,568.

Patented Aug. 29, 1916.

4 SHEETS—SHEET 1.

Fig. 1.

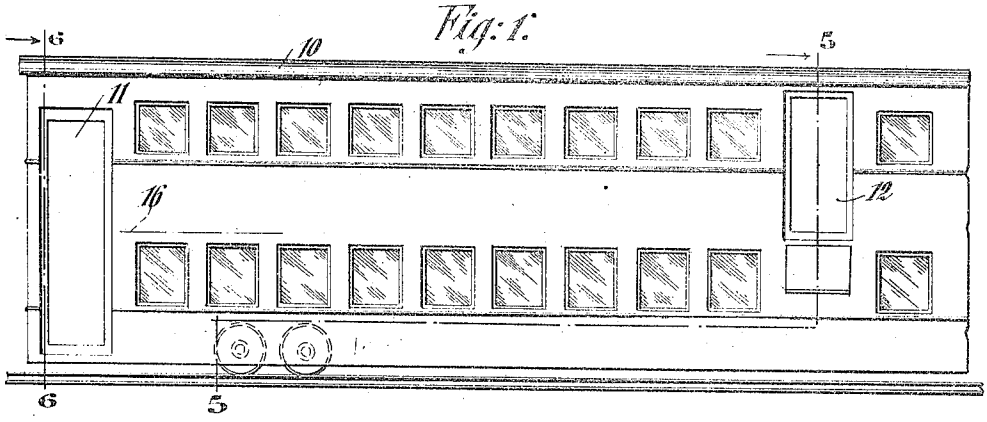
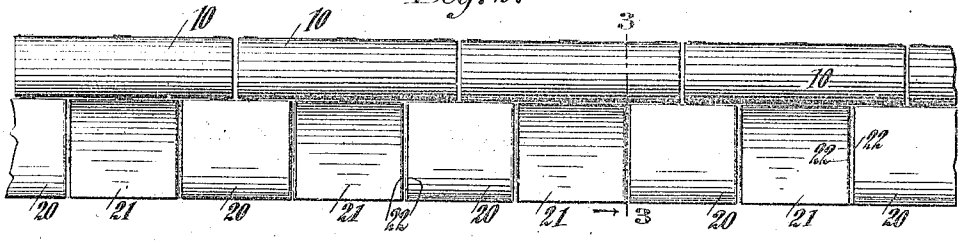


Fig. 2.



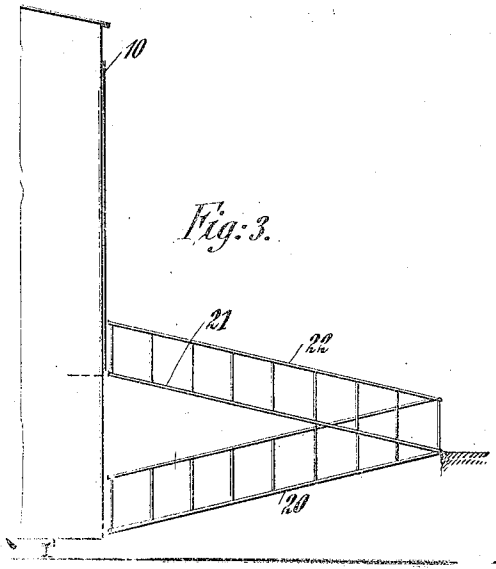


Fig. 3.

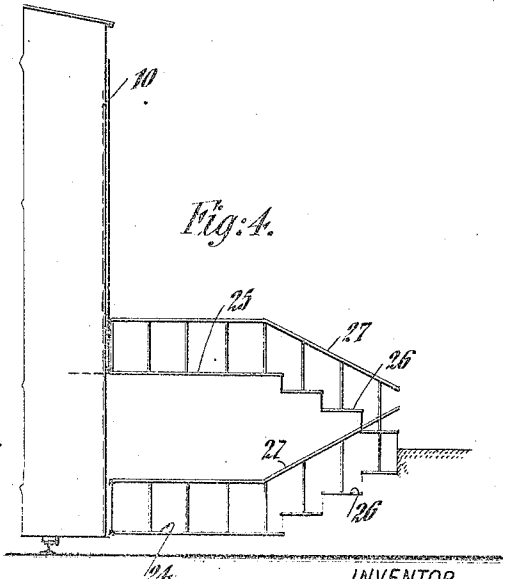


Fig. 4.

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4 SHEETS—SHEET 2.

Fig. 5.

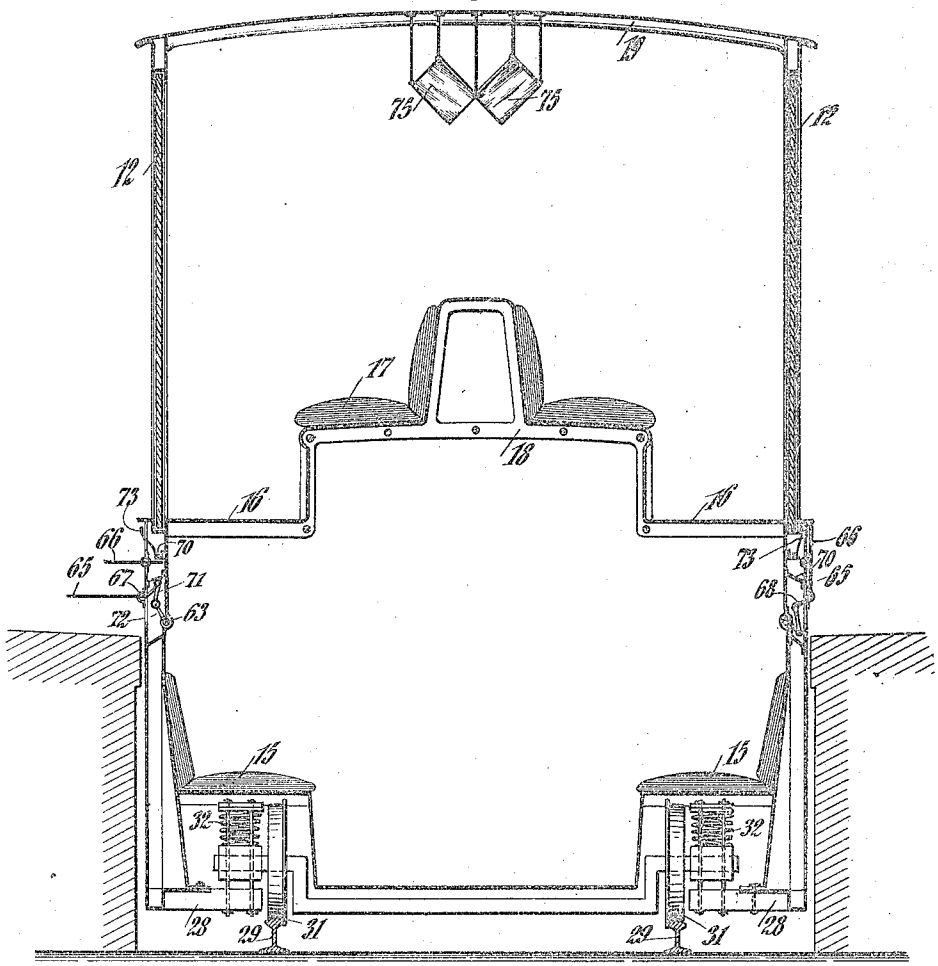
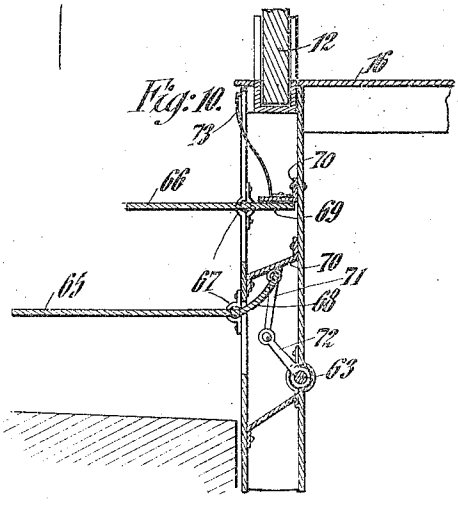


Fig. 10.



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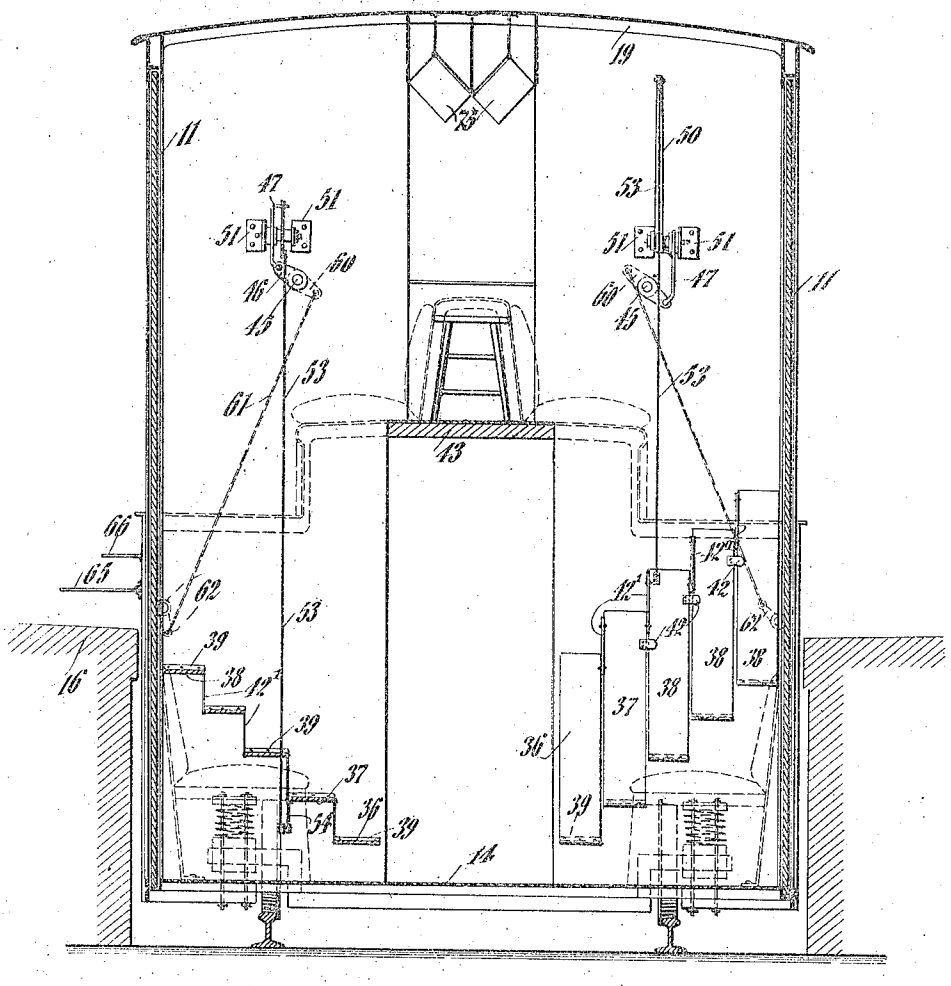
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4 SHEETS—SHEET 3.

Fig. 6.



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4 SHEETS—SHEET 4.

Fig: 7.

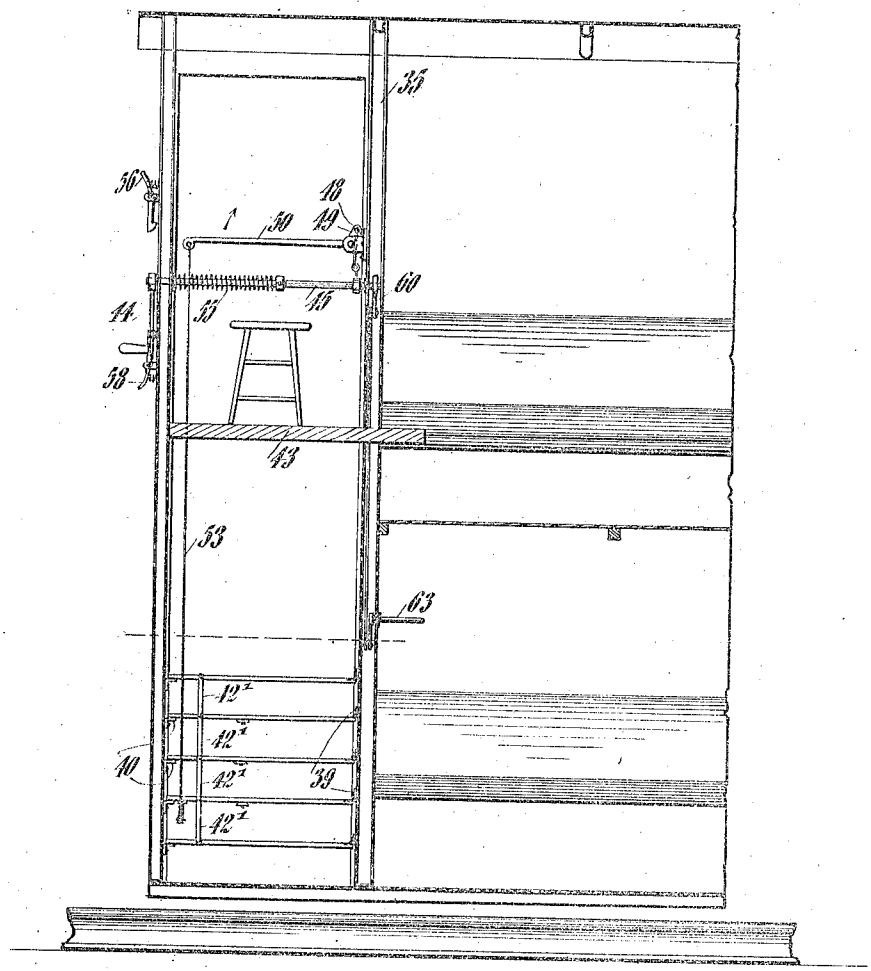


Fig: 9.

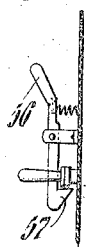
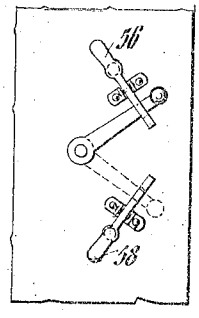


Fig: 8.



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UNITED STATES PATENT OFFICE.

BERNARR MACFADDEN, OF NEW YORK, N. Y.

DOUBLE-DECKED CAR.

1,196,568. Specification of Letters Patent. Patented Aug. 29, 1916.

Application filed April 14, 1916. Serial No. 91,045.

To all whom it may concern:

Be it known that I, BERNARR MACFADDEN, a citizen of the United States of America, residing in the city of New York, State of New York, United States of America, have invented a new and useful Improvement in Double-Decked Cars; and I do hereby declare the following to be a full, clear, and exact description of the same.

This invention relates to cars, and particularly to passenger cars for subways, though it is not at all limited to subways in its application.

An object of the invention is to provide a double decked car, and station platform approaches for the same, adapted for places, for instance subways, where the height of headroom is limited.

Further objects are to provide removable steps whereby such a car can be used either with such approaches or with the present style single station-platforms, and whereby one man can see and operate several of such sets of steps at the same time.

While herein are described minute details of the invention, it is understood that the details of construction and combination may be greatly varied without departing from the spirit and scope of the invention as claimed.

In the accompanying drawing showing by way of example, one of many possible embodiments of the invention Figure 1 is a fragmental side elevation of the car; Fig. 2 is a plan of a train of cars and one style of platform approach to the cars; Fig. 3 is a sectional view, partly in elevation, taken on the line 3—3 of Fig. 2; Fig. 4 is a similar view showing a modified form of approach; Fig. 5 is a transverse sectional view, on an enlarged scale, taken approximately on the line 5—5 of Fig. 1; Fig. 6 is a transverse sectional view taken approximately on the line 6—6 of Fig. 1; Fig. 7 is a fragmental central longitudinal sectional view of the end vestibule of the car; Fig. 8 is an elevation of a portion of the end face of a car showing the hand lever for operating the steps and a device for holding it against accidental movement, and Fig. 9 is a side elevation of said device. Fig. 10 is a fragmental sectional view of a detail.

The car 10 is a double-decked car having upper and lower windows, end doors 11 and one or more intermediate side doors. The lower floor or deck 14 (Fig. 5) is provided with longitudinal side seats 15 while the upper floor or deck 16 is provided with longitudinal center seats 17. The space under the seats 17 provides for sufficient headroom between the floor 14 and ceiling 18 of the lower deck, so much headroom over the seats 15 being unnecessary. Sufficient headroom is provided between the floor 16 and the ceiling 19 of the upper deck. The end doors 11 permit access to the lower floor 14, and the intermediate door permits access to the upper deck 16. In order that these doors may be approached at the same time, the station platforms may be divided into inclines or ramps 20 and 21, the ramps 20 leading down to the end doors and the lower deck, while the ramps 21 lead up to the door 12 and the upper deck. The ends of these ramps are provided with railings 22 to prevent passengers stepping off at the edges of the ramps. Instead of ramps, upper and lower station platforms 24 and 25, approached by steps 26 and furnished with railings 27 may be provided.

In order to provide a car with the desired minimum headroom, the foundation frame 28 is placed as near the rails 25 as practicable and the car axles 30 are bent downwardly in the middle to give room for the floor 14, the wheels 31 being rotatably mounted on the axles and disposed under the seats 15.

Suitable springs 32 are anchored to the frame 28 and support the car upon the axles 30.

It is desirable to provide disappearing steps or stairs whereby the car may be adapted for use with the present single station-platforms now in use. To this end, I have provided disappearing or foldable steps for descent from the door 12 (Fig. 5) and ascent from the floor 14 through the door 11 (Figs. 6 and 7).

The doors 11 and 12 slide in the walls of the car and may be operated electrically or mechanically by some well known means forming no part of the present invention.

In order to ascend from the floor 14 to the old style platform 16, I provide a set of steps 34 (Figs. 6 and 7) which may be folded flat against the partitions 35 when not in use, as when the ramps 20 are used.

Each step 36, 37, 38 is hinged as at 39 (Fig. 7) to the partition 35 and the free end of each step rests on a bracket 40 (Fig. 7) on the inside of the end wall 41 of the car.

These steps are linked together by small links 42', which cause them to move in unison. In addition each step, except the top and bottom steps, carries on its lower face a small plate 42 adapted to assist in holding the steps flat against the partition, as in the right of Fig. 6.

The guard or conductor sits on the stool or stands upon the platform 43 and may operate the handle 44 (Fig. 7) mounted on the shaft 45 movable in suitable bearings in the partition 35 and wall 41.

Near the partition 35 a crank 46 is fixed on this shaft; and, in a hole in the end of the crank, the lower end of link 47 engages. The upper end of the link engages in an eye 48 (Fig. 7) in the end of an extension 49 on a lever 50 pivoted between ears 51 (Fig. 6).

At the free end of the lever 50 is pivoted a rod 53 pivoted at its lower end to a bracket 54 fixed to the next to the bottom step 37.

On the shaft 45 is disposed a strong coiled spring 55 having one end secured to the end wall 41 and the other to the shaft. This coil has such strength and is wound in such direction that the steps 34 and lever 50 are held in the position shown at the left of Fig. 6.

As an extra precaution, and in order to hold the parts in this position, the spring 55 is supplemented by a spring pressed catch 56 (Figs. 8 and 9) pivotally mounted on the end wall 41 and provided with a hooked end 57 engaging over the handle lever 44 when in the upper position of Fig. 8. A similar catch 58 serves to hold the parts 34, 44 and 50 in the position of Fig. 7 and the left of Fig. 6.

The shaft 45 extends into the space in the partition 35 and is provided with a crank 60 (Figs. 6 and 7) to which is linked a rod 61 which has its lower end linked to a crank 62 fixed on a shaft 63 mounted in the side wall of the car and extending beneath the door 12 (Figs. 5 and 10).

A pair of steps 65 and 66, provided for each door 12, are pivoted between ears 67 on the side wall of the car. The steps have rear extensions 68 and 69 engaging shoulders 70 provided on the car wall, for limiting the downward movement of the steps. To the inner end of the extension 68 is pivoted a link 71 pivoted to the crank 72 fixed to the shaft 63.

When the handle lever 44 (Fig. 7) is in upper position, the steps 65 and 66 are in closed position as shown at the right of Fig. 5. If the handle lever 44 be lowered, the shafts 45 and 63 and connecting parts lower the step 65 to the position at the left of Fig. 5. The step 66 is then pushed out by the spring and falls to the horizontal position. The mirrors 75 mounted on the ceiling 19 between the doors 12 are so adjusted that the guard on the platform 43 can, by looking into the mirrors, have a good view of the doors 12 or the passengers entering or leaving the same. As the platform 43 extends only a short distance across the verstibule of the car, the guard also has a good view of the doors 11.

The operation, which is easily understood from the foregoing, may be briefly stated as follows:—When the car is used in connection with the ramps 22 (Fig. 3) or platforms 25 (Fig. 3) the doors are opened and closed in the ordinary way by well known means now in use and not shown in the drawing, the guard having a good view of all the doors by the mirrors 75 and because of the location of the platform 43 above the heads of the passengers. If the car is used in connection with the old style platform 16, the guard first releases the catch 56 and pulls down the handle lever 44, thus lowering into place the steps 34, 65 and 66 against the action of the spring 55, until the handle is caught by the catch 58 (Fig. 8). After all who desire have passed through the doors, the doors are closed, and the catch 58 released, whereupon the steps 34, 65 and 66 and the handle lever 44 return to their upper position under the action of the spring 55, and the handle lever is then caught by the catch 56.

I claim as my invention:—

1. A car having upper and lower floors and side doors for both floors, the lower doors extending above the lower level of the upper doors.

2. A car having upper and lower floors and side doors for both floors off-set the one from the other, the lower doors extending above the lower level of the upper doors.

3. In a double-decked car, the combination of a lower floor; seats disposed along the sides of the lower floor; an upper floor; seats disposed back-to-back longitudinally along the middle of car and forming, with the upper floor, the ceiling of the lower deck of the car; side doors for the lower floor; and side doors for the upper floor.

4. In a double-decked car, the combination of a lower floor; seats disposed along the sides of the lower floor; an upper floor; seats disposed back-to-back longitudinally along the middle of car and forming, with the upper floor, the ceiling of the lower deck of the car; side doors for the lower floor; and side doors for the upper floor, the side doors of one floor being off-set from the doors of the other floor.

5. In a double-decked car, the combination of a lower floor; seats disposed along the sides of the lower floor; an upper floor; seats disposed back-to-back longitudinally along the middle of car and forming, with the upper floor, the ceiling of the lower deck of the car; side doors for the lower floor; side doors for the upper floor and a plat-

form between opposite doors of the lower deck and level with the seats of the upper deck.

6. In a double-decked car, the combination of a lower floor; seats disposed along the sides of the lower floor; an upper floor; seats disposed back-to-back longitudinally along the middle of car and forming, with the upper floor, the ceiling of the lower deck of the car; side doors for the lower floor; side doors for the upper floor and a platform between opposite doors of the lower deck and level with the seats of the upper deck and extending only a portion of the distance transversely of the car.

7. In a double-decked car, the combination of a lower floor; seats disposed along the sides of the lower floor; an upper floor; seats disposed back-to-back longitudinally along the middle of car and forming, with the upper floor, the ceiling of the lower deck of the car; side doors for the lower floor; side doors for the upper floor; folding steps leading down from the upper doors; and folding steps leading up from the lower floor to the lower doors.

8. In a double-decked car, the combination of a lower floor; seats disposed along the sides of the lower floor; an upper floor; seats disposed back-to-back longitudinally along the middle of car and forming, with the upper floor, the ceiling of the lower deck of the car; side doors for the lower floor; side doors for the upper floor; folding steps leading down from the upper doors; folding steps leading up from the lower floor to the lower doors; a platform on the upper deck level with the seats thereof; and means near said platform for operating both sets of steps.

9. A car having upper and lower floors and side doors for both floors off-set the one from the other; folding steps leading down from the upper doors; and folding steps leading up from the lower floor to the lower doors.

10. A car having upper and lower floors and side doors for both floors off-set the one from the other; folding steps leading down from the upper doors; folding steps leading up from the lower floor to the lower doors; and means for operating both sets of steps.

11. In a double-decked car, the combination of a lower floor; seats disposed along the sides of the lower floor; an upper floor; seats disposed back-to-back longitudinally along the middle of car and forming, with the upper floor, the ceiling of the lower deck of the car; side doors for the lower floor; side doors for the upper floor; and a platform on the upper deck level with the seats thereof.

12. In a car, the combination of a side wall of the car; a side door therein; a plurality of steps pivoted below said door at their inner edge, said steps progressively increasing in width from the top step down; and means contained in said side wall for moving said steps from vertical to horizontal position.

13. In a car, the combination of a transverse wall of the car; a side door next to said wall; and a plurality of steps hinged to said wall and adapted to be moved flat against the wall.

14. In a car, the combination of a transverse wall of the car; a side door next to said wall; a plurality of steps hinged to said wall and adapted to be moved flat against the wall; links connecting said steps; a lever; a rod connecting the free end of the lever to one of the steps; and means for operating the lever.

15. In a double-decked car, the combination of a lower floor; seats disposed along the sides of the lower floor; an upper floor; seats disposed back-to-back longitudinally along the middle of car and forming, with the upper floor, the ceiling of the lower deck of the car; side doors for the lower floor; side doors for the upper floor; folding steps leading down from the upper doors; folding steps leading up from the lower floor to the lower doors; yieldable means normally holding said steps in folded position; and means for operating the yielding means.

16. In combination, a double-decked car provided with side doors for both decks; an intermediate platform; and upper and lower station platforms for said doors.

17. In combination, a double-decked car provided with side doors for both decks; an intermediate platform; upper and lower station platforms for said doors and inclined structures leading up from the intermediate platform to the upper platforms and down from the intermediate platform to the lower platforms.

18. In combination, a double-decked car provided with side doors for both decks; an intermediate platform; and ramps leading up from the intermediate platform to the upper deck doors and down from the intermediate platform to the lower deck doors.

In testimony whereof, I have signed my name to this specification.

BERNARR MACFADDEN.