

Aug. 27, 1940.

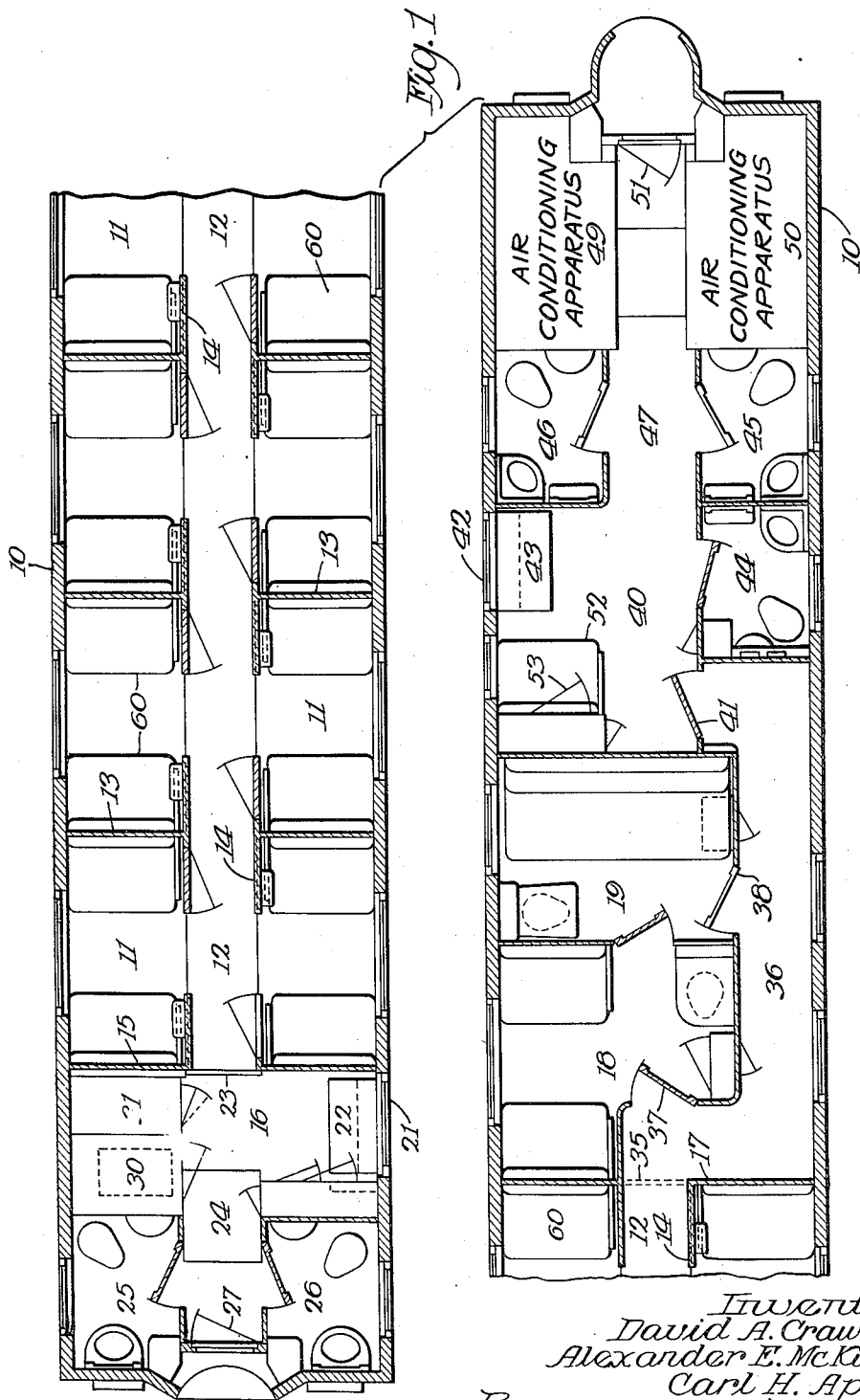
D. A. CRAWFORD ET AL

2,212,897

RAILWAY CAR

Filed July 8, 1938

4 Sheets-Sheet 1



Inventors
David A. Crawford
Alexander E. McKinnon
Carl H. Apel
By Oscar Hochberg, Att'y.

Aug. 27, 1940.

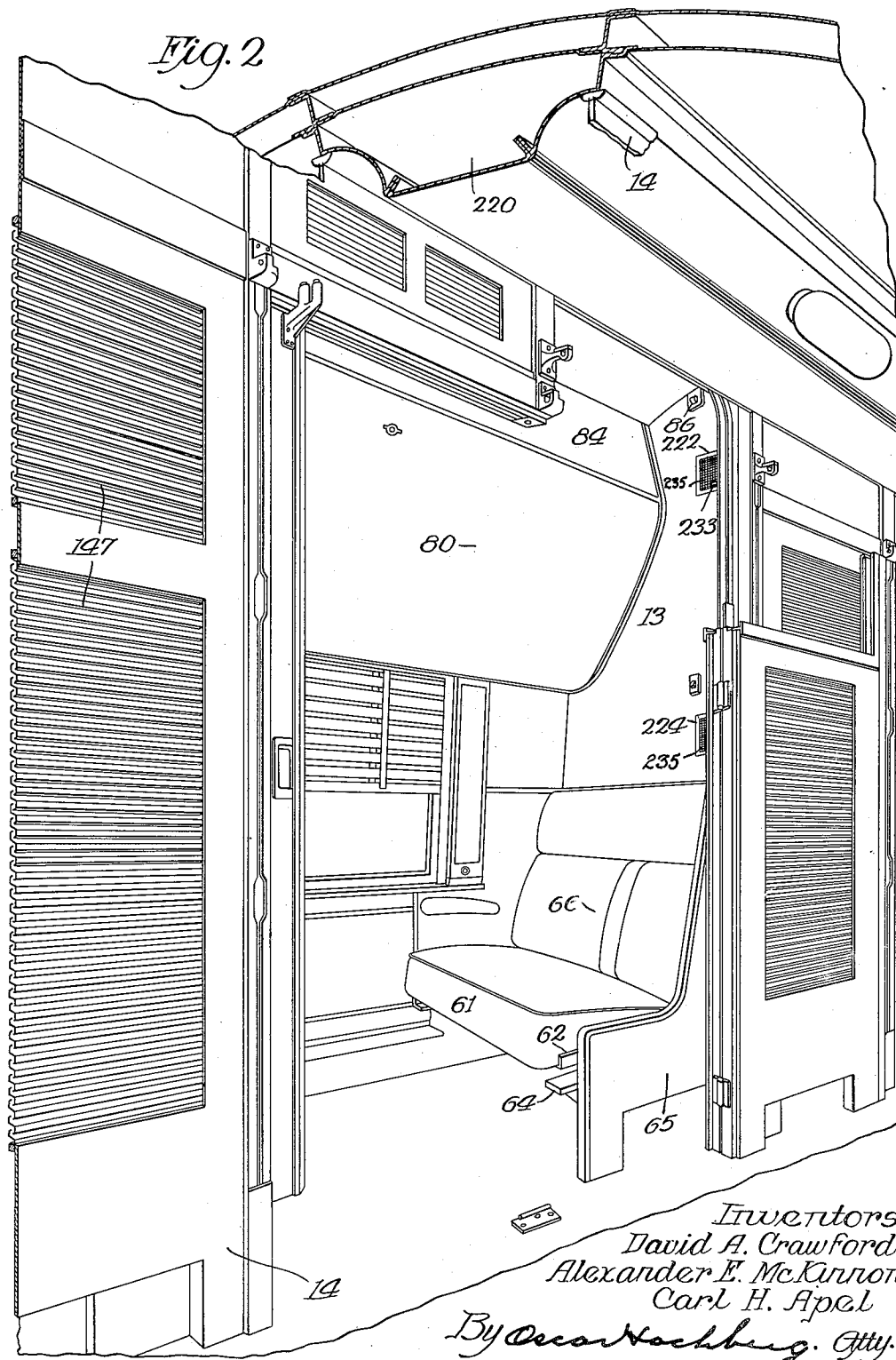
D. A. CRAWFORD ET AL

2,212,897

RAILWAY CAR

Filed July 8, 1938

4 Sheets-Sheet 2



Aug. 27, 1940.

D. A. CRAWFORD ET AL

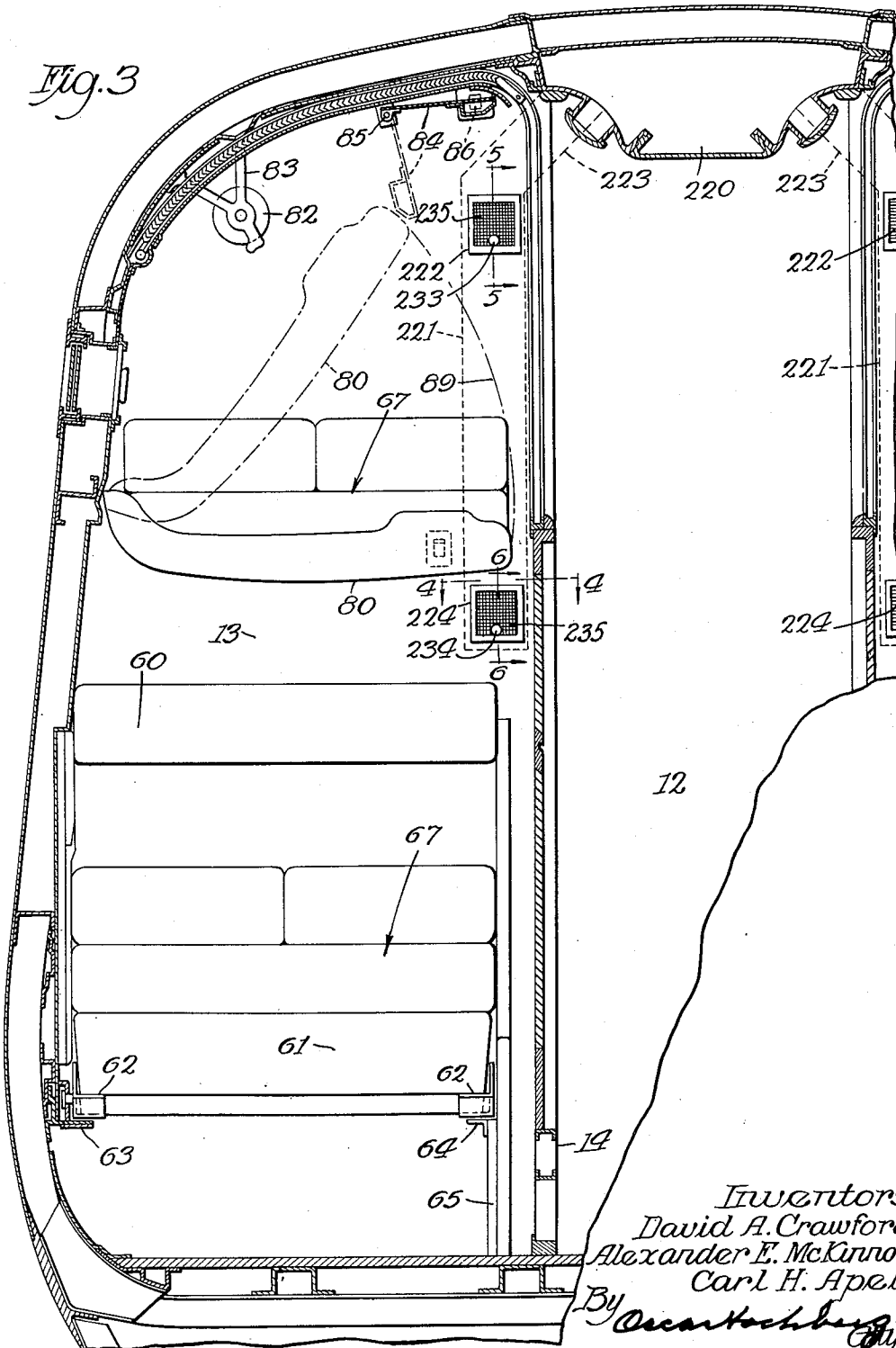
2,212,897

RAILWAY CAR

Filed July 8, 1938

4 Sheets-Sheet 3

Fig. 3



Inventors
David A. Crawford
Alexander E. McKinnon
Carl H. Apel
By Oscar Kochberg
Att.

Aug. 27, 1940.

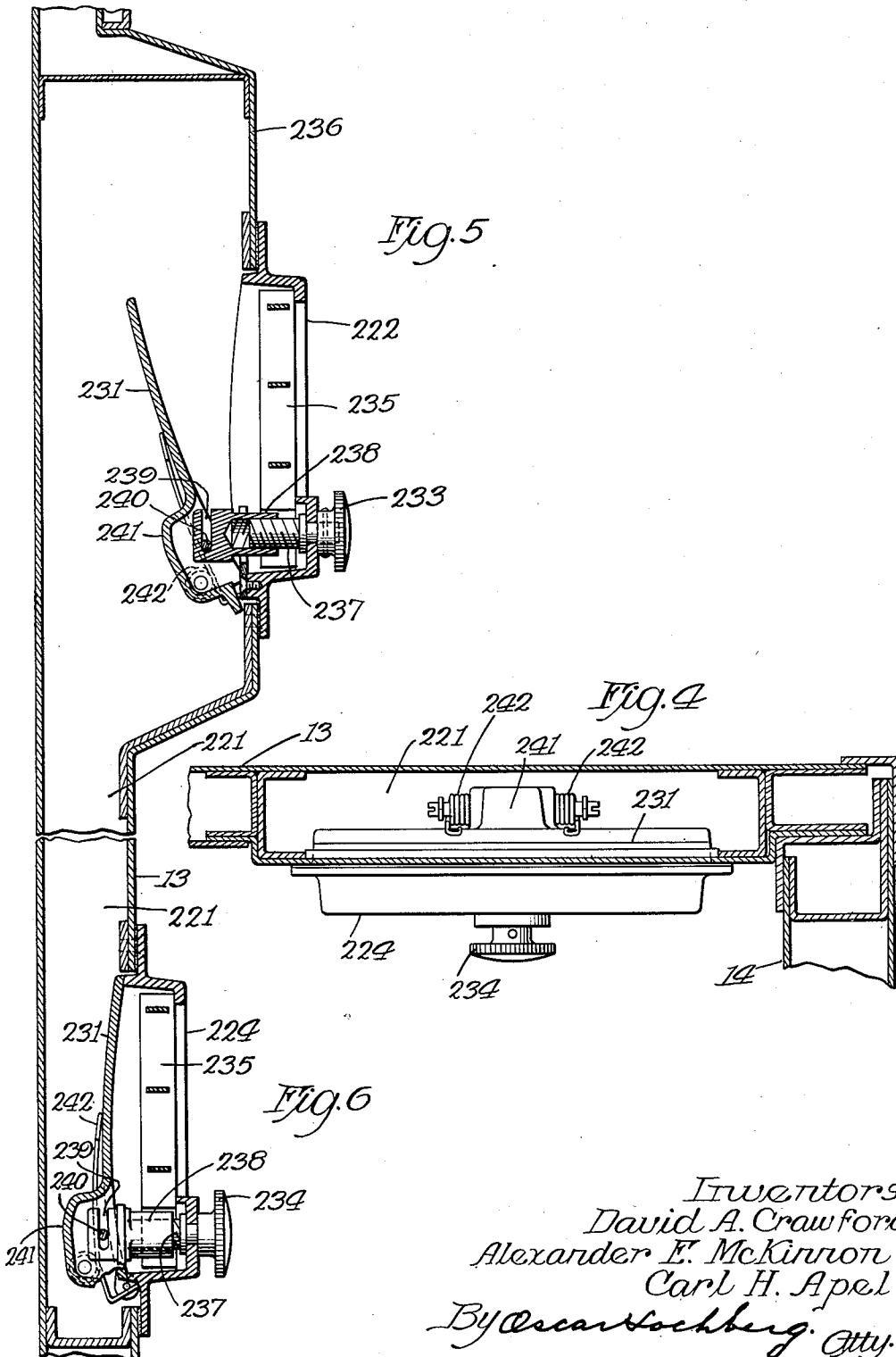
D. A. CRAWFORD ET AL

2,212,897

RAILWAY CAR

Filed July 8, 1938

4 Sheets-Sheet 4



Inventors:
David A. Crawford
Alexander E. McKinnon
Carl H. Apel
By Oscar Lockberg, Atty.

UNITED STATES PATENT OFFICE

2,212,897

RAILWAY CAR

David A. Crawford, Golf, Alexander E. McKinnon, Homewood, and Carl H. Apel, Chicago, Ill., assignors to The Pullman Company, Chicago, Ill., a corporation of Illinois

Application July 8, 1938, Serial No. 218,098

3 Claims. (Cl. 98—5)

The invention relates to railway sleeping cars and has particular reference to a car involving the use of metal partitions designed to convert the customary open berth sections upon opposite sides of a central aisle into private upper and lower compartments, with separate entrances to each, as covered in our copending application Serial No. 96,480, filed August 17, 1936, now Patent No. 2,134,032, of October 25, 1938.

10 The principal object of this invention is the utilization of air conditioning equipment for ventilating the individual compartment spaces by enclosed branch ducts having separately controlled outlets from an overhead general air duct, the circulation of air in the compartments being facilitated by the use of louvered panels in the aisle partitions providing communication with the air outside the compartments for the purpose of recirculation.

20 The foregoing and other objects of the invention are realized by the arrangement illustrated in the accompanying drawings, in which

Fig. 1 is a general plan view of a sleeping car equipped in accordance with the invention, showing a series of section compartments arranged upon opposite sides of a central aisle, and air conditioning apparatus upon opposite sides of the aisle at the end of the car;

Fig. 2 is a general perspective view from the aisle of the car looking into compartment made up for day use and showing the central overhead general air duct and the branch duct upper and lower outlets in a wall of the compartment;

Fig. 3 is a cross-sectional view through an upper and a lower compartment made up for night use and illustrating a branch duct having outlets for the upper and lower compartments, respectively; and

Figs. 4, 5 and 6 are detail sectional views of the branch ducts and controllable outlets taken on the lines 4—4, 5—5 and 6—6 of Fig. 3, illustrating the dampers for regulating the air emission from the respective outlets.

For details of the compartment and berth constructions and arrangements, reference is made to the copending application hereinabove referred to, and the present description will be confined to the ventilating arrangement.

In the drawings, 10 represents a sleeping car having berth sections 11 arranged upon opposite sides of a central longitudinal aisle 12 defined by a pair of partitions 14 extending from a bulkhead 15 at the vestibule 16 adjacent one end of the car to the bulkhead 17 separating the berth section area from the compartment and bedroom

spaces 18 and 19 rearwardly thereof. Forwardly of bulkhead 15 the vestibule 16 provides an entrance to the car through door 21 and retractable steps 22, access to the central aisle 12 being had through door 23 of the bulkhead. From the vestibule a central passageway 24 leads to the women's toilets 25 and 26 on opposite sides of the car and to entrance 27 at the front end of the car—giving access to other cars of the train. From the vestibule 16 access is had to linen lockers 30 and 31 and switchboard lockers 32.

Entrance to space rearwardly of bulkhead 17 is had through door 35 leading to side aisle or passageway 36 at the side of the car giving access to compartment 18 and bedroom 19 through doors 37 and 38, respectively, and to a second vestibule 40 through doorway 41 giving access to another entrance 42 and steps 43 on the opposite side of the car. From vestibule 40 access is had to men's toilets 44, 45 and 46 and, through a second central passageway 47, to compartments 49 and 50 housing the air conditioning apparatus and to rear door 51. The vestibule 40 accommodates a porter's seat 52 and gives access to lockers 53 containing electric control equipment for the air conditioning system.

Although eight berth compartment sections are indicated in the present embodiment, any number of such sections may be provided, and the position of the sections with respect to other facilities of the car may be adapted to any operating condition.

The berth sections 11 are fitted with the customary pair of confronting seats 60 arranged for adjustment by the occupant to a lounging position and convertible to provide a lower berth by shifting the seat cushions 61 towards each other with their respective supporting bars 62 slidably mounted upon brackets 63 and 64 secured, respectively, to the car side and seat ends 65. The seat back cushions 66, pivotally connected to the seats, likewise assume horizontal positions in the space between the shifted seat cushions 61 and section partition 13 in a manner usual to such arrangements to form with the seat cushions a support for the bedding 67.

The upper bunks 80 are pivotally secured to the partitions 13 above the seats 60 at the car sides, as in general practice, and adapted, when lowered, to provide upper berths. In their lowered position, the bunks 80 are chain-supported at their free edges from the usual berth sheaves 82 mounted on brackets 83 fixed to the car roof framing. When the upper bunks 80 are in raised position, the space between the free edge thereof

and the ceiling 79 is closed by an apron 84 pivoted at 85, and, when the bunks are lowered, the aprons 84 are raised and held by latches 86 in the partitions 13 until released by the attendant upon raising of the bunks.

The aisle partitions 14 are spaced from the seat ends 65 and the free edges of upper bunks 80 to provide upper and lower compartments of greater width than possible with constructions wherein the seat ends constitute portions also of the partitions and, incidentally, to provide, with respect to the bunks, sufficient clearance for movement thereof through the arc indicated at 89.

The aisle partitions are made up of panels with louvers 147 shaped and disposed to prevent a view of the compartment interior from the aisle but allowing the circulation of an adequate volume of air therethrough. In actual practice the louvers are preferably of modified Z-section mounted with their inner and outer flange portions lying in parallel, vertical planes and connected by a web portion disposed at an obtuse angle with respect to such flanges—said flanges being formed with inwardly directed wing portions but spaced from contiguous wings and flanges of adjacent louvers to define air passages substantially offset to obstruct the view.

The air conditioning equipment of the car is utilized for ventilating the compartments. This is accomplished by introducing conditioned air from a main duct 220 at the ceiling of the car outside of the compartments downwardly through branch ducts 221 in partitions 13 communicating with registers 222 and 224 opening into the upper and lower compartments, respectively, and under control of the occupants. The air from the main duct is conveyed, under pressure, through lateral connecting ducts 223 at the several sections and expelled from compartments through the louvered partitions to the aisle, the air thus expelled being recirculated with fresh air conditioned by suitable apparatus, not shown, in compartments 49 and 50 upon opposite sides of the passageway 47 at one end of the car shown in Fig. 1.

The branch ducts 221 and the upper and lower outlets are best illustrated in Figs. 4, 5 and 6, and it will be seen that the respective outlets 222 and 224 are individually regulated by adjustable dampers 231 and 232 manually controlled by means of hand knobs 233 and 234. The respective outlets 222 and 224 are provided with vertically disposed louvers 235 arranged at an angle such as to direct the air issuing therefrom into the respective upper and lower compartments in a general longitudinal direction towards the side walls. It will be noted, from an inspection of Fig. 5, that the upper compartment outlet 222 is mounted in an offset portion 236 of the duct 221 in order that when the damper 231 is open a portion of the air coming from the main duct 220 through the lateral duct 223 is permitted free passage past the open damper to the lower compartment outlet 224, whereby conditioned air is equally available, in easily controlled quantities, to either compart-

ment at any time regardless of the respective damper settings.

The damper control knobs 233 and 234 operate the respective dampers 231 and 232 by means of fast-acting screw-threaded connections. These connections each comprise a threaded shank 237 fixedly secured to the control knob and threading into a collar 238 which is provided with a slot 239 in interlocked engagement with a pin 240 mounted across the recess 241 in the damper accommodating the slotted collar 238. The slot 239 permits ready assembly of the parts and permits operation of the damper about an arc as the control parts move in a straight in-and-out motion. Torsional spring 242, mounted about the axis of the damper, urges the damper towards closed position.

The air issuing into the berths from the outlets 222 and 224, after circulation therein, is exhausted through the louvered aisle partitions and recirculated, as stated, with fresh air conditioned by the apparatus in compartments 49 and 50.

What is claimed is:

1. In a car having a central aisle, berth sections upon opposite sides of said aisle, partitions disposed transversely of the car separating said sections and extending from respectively opposite side walls of the car to the aisle, a conditioned air supply duct above said aisle, branch ducts in said partitions from the supply duct communicating with the respective sections by means of controllable outlets disposed adjacent to said aisle, and means in said outlets for directing the air issuing therefrom in a generally longitudinal direction away from said aisle.

2. In a car having a central aisle, berth sections upon opposite sides of the aisle, partitions disposed transversely of the car separating said sections and extending from respectively opposite side walls of the car to the aisle, a conditioned air supply duct above said aisle, branch ducts in said partitions from the supply duct communicating with the respective sections by means of controllable outlets disposed adjacent to said aisle, means in said outlets for directing the air issuing therefrom in a generally longitudinal direction away from said aisle, and means for withdrawing air from said berth sections for recirculation.

3. In a car having a central aisle, berth sections upon opposite sides of said aisle, partitions disposed transversely of the car separating said sections and extending from respectively opposite side walls of the car to the aisle, a conditioned air supply duct above said aisle, branch ducts in said partitions from the supply duct communicating with the respective sections by means of controllable outlets disposed adjacent to said aisle, and means in said outlets for directing the air issuing therefrom in a generally longitudinal direction away from said respective partitions.

DAVID A. CRAWFORD.
ALEXANDER E. MCKINNON.
CARL H. APEL.