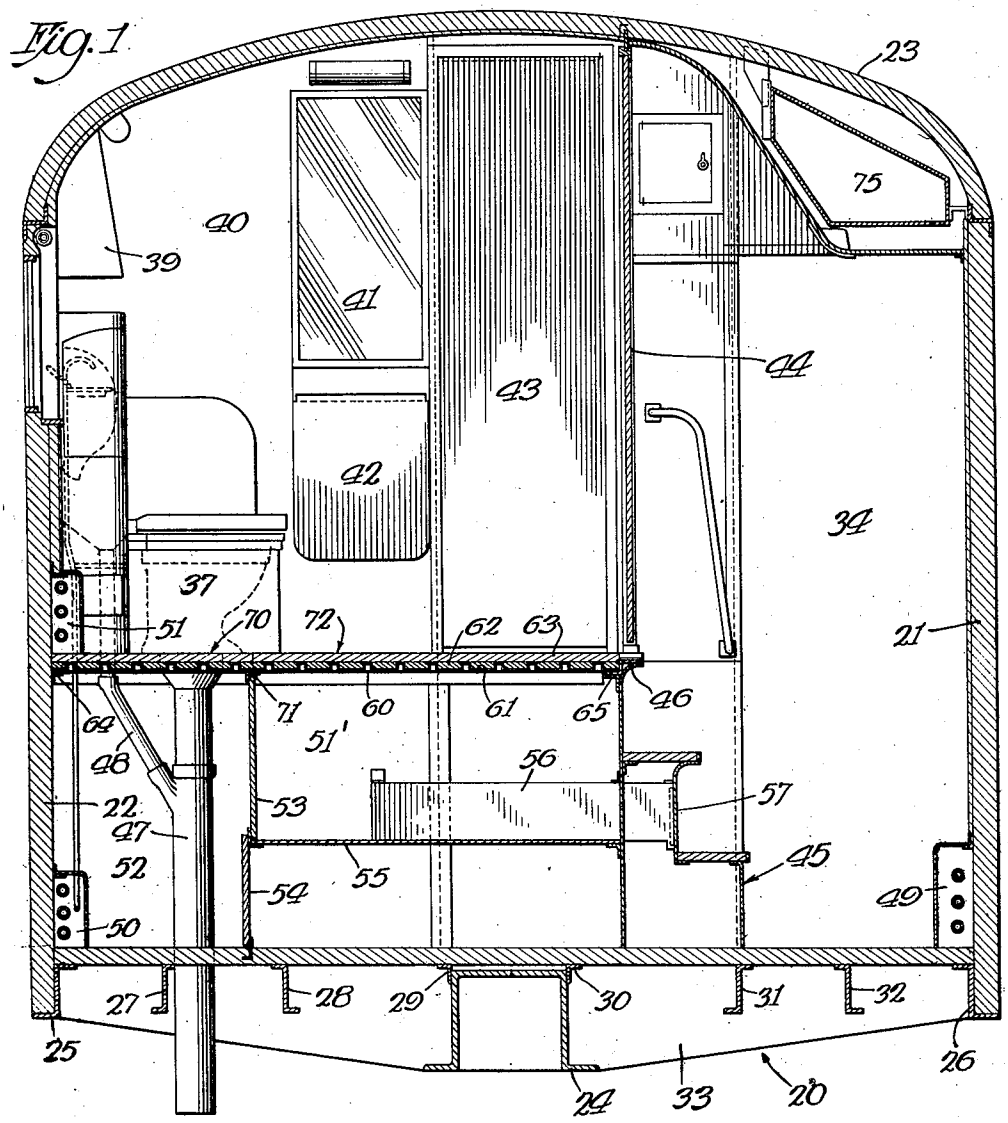
Nov. 5, 1940. A. H. LUNDBERG 2,220,253

RAILWAY CAR

Filed Nov. 14, 1938 2 Sheets-Sheet 1

Fig. 1



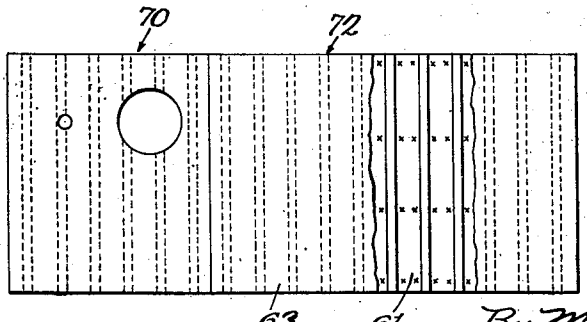


Fig. 5

Inventor:
Arthur H. Lundberg

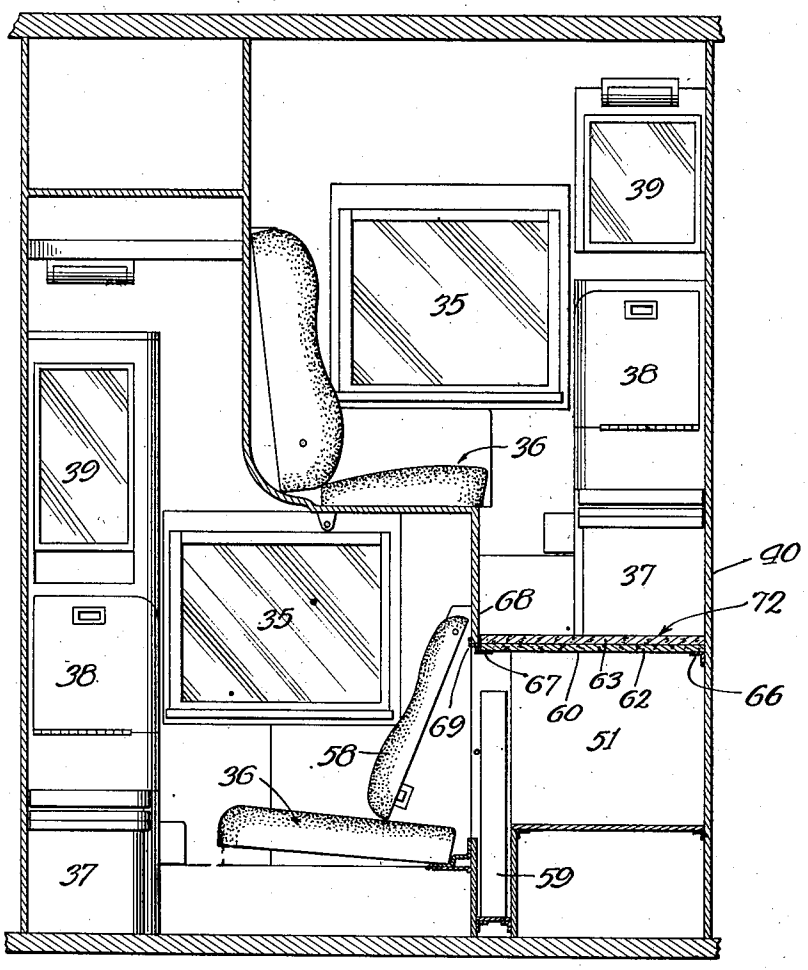
By Mann, Brown & Co.
Attys.

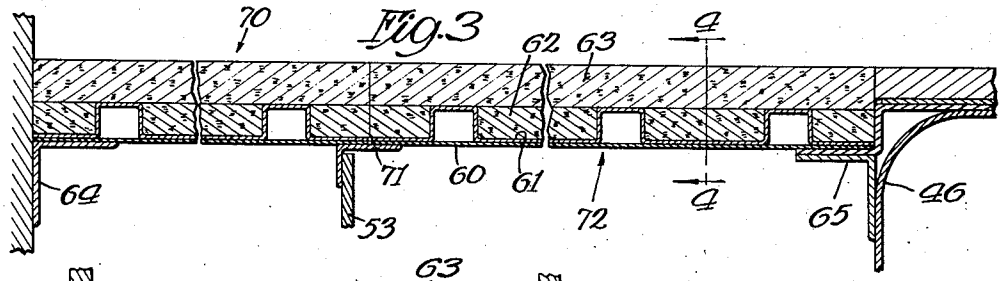
Nov. 5, 1940. A. H. LUNDBERG 2,220,253

RAILWAY CAR

Filed Nov. 14, 1938 2 Sheets-Sheet 2

Fig. 2





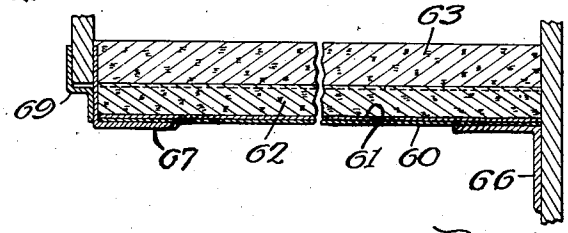


Fig. 4

Inventor:
Arthur H. Lundberg
By Mann, Brown & Cof Attys.

Patented Nov. 5, 1940 2,220,253

UNITED STATES PATENT OFFICE

2,220,253

RAILWAY CAR

Arthur H. Lundberg, Chicago, Ill., assignor to Pullman-Standard Car Manufacturing Company, Chicago, Ill., a corporation of Delaware

Application November 14, 1938, Serial No. 240,244

2 Claims. (Cl. 105—422)

The principal object of this invention is to provide a self supporting floor particularly suitable for use in railway passenger cars, and which preferably may be constructed as a sub-assembly for subsequent installation as a unit.

Other objects and advantages will become apparent as the disclosure proceeds and the description is read in conjunction with the accompanying drawings, in which—

Fig. 1 is a vertical transverse sectional view of a railway car showing the floor, constituting the subject matter of the present invention, as applied to a duplex or double decked car;

Fig. 2 is a vertical longitudinal sectional view taken through adjoining rooms of a duplex car showing the support for the floor, shown in Fig. 1, along two opposite sides of the room;

Fig. 3 is an enlarged detail view of the floor, shown in Fig. 1, and corresponding to the showing of Fig. 1;

Fig. 4 is a vertical sectional view of the floor taken on the line 4—4 of Fig. 3;

Fig. 5 is a plan view of the floor shown in Fig. 1 with a portion of the cork flooring broken away to show the underneath structure.

A preferred embodiment of this invention is selected for the purpose of description only and is not intended to place limitations on the claims beyond those required by the state of the prior art.

Due to the lack of room in bedrooms and other relatively small accommodations in passenger cars it is desirable wherever possible to construct portions of the rooms as sub-assemblies and then to install these sub-assemblies as units into the car body. These units can thus be fabricated away from the car body in shops where ample space is provided without any thought of possible over-crowding of the car while it is under construction. Furthermore, the fabrication of these various sub-assemblies can be carried on simultaneously and their installation into the car structure can be made in their logical sequence. This avoids delays due to the inability of the men to work efficiently in an overcrowded room and greatly increases the standard of workmanship obtainable.

The present invention relates to a floor which is self-supporting in that it can be suspended from its four sides and is capable of carrying the required loading without any additional cross bracings. This floor can be built as a sub-assembly and then brought to the car and installed as a unit.

For the purpose of disclosing the invention a car having duplex or double deck rooms has been chosen and the floor in the upper room only has been selected for the disclosure.

General organization of car

Referring to Figure 1 the car body is made up of an underframe, generally indicated at 20, a pair of side frames 21 and 22, a roof frame 23, and suitable end frames (not shown). The underframe includes a center sill 24, a pair of side sills 25 and 26 and longitudinal floor stringers 27 through 32, inclusive. These various members tie into the car framing in some suitable manner and are reenforced by transverse framing members one of which is shown in Fig. 1, at 33.

A plurality of duplex rooms are arranged along one side of the car and an aisle 34 runs longitudinally of the car body along the other side, as shown in Figure 1. Each room, whether it be an upper or a lower, is provided with a window 35, a sofa, generally indicated at 36, toilet facilities, including a hopper 37, a wash stand 38 and a medicine cabinet 39. A partition 40 separates adjoining upper rooms upon which is mounted a mirror 41 and a folding table 42. A communicating door 43 places the adjoining rooms en suite and a door 44 is provided in each room to give access into the aisle.

A stairway 45 leads to the upper room and its top riser 46 serves as one end support for the upper room floor. Extending downwardly from the hopper 37 is a hopper chute 47 which passes through the bottom of the car and discharges onto the right-of-way. The wash basin 38 discharges into the drain 48 which in turn empties into the hopper chute 47 and thence onto the right-of-way. Extending longitudinally of the car along opposite walls are suitable heating coils 49, 50 and 51 which supply heat to the aisle and to the rooms, respectively and overhead ventilation is furnished for each room through a distribution duct 75 situated above the aisle 34, the aisle in turn serving as the return duct.

Below the floor of the upper room is a storage space 51' positioned directly behind the stairs 45 and a hopper chute compartment 52 positioned between the storage compartment 51' and the car side 22. Partitions 53 and 54 separate the storage space 51' from the hopper chute enclosure 52 and a floor panel 55 serves as the floor for the storage space 51'. A table storage compartment 56 is supported on this floor panel 55 within the storage space 51' and opens in the

second riser of the stair **45**, as shown at **57**. Access may be had into the storage space **51'** from the lower room, as shown in Fig. 2, by raising the back **58** of the sofa **36**. A mattress pocket **59** is positioned between the storage space **51'** and the back of the sofa **36**.

Floor structure per se

The floor structure comprises a sheet **60** made of some light weight material, such as aluminum or the like, to which is spot welded a corrugated sheet **61** which is stiff enough to support the floor loading without any additional intermediate supporting members. Filler blocks **62** made of cork, rubber or other suitable material are placed between the corrugations, as shown in Fig. 3, and are of sufficient depth that when they are in place their top surfaces are flush with the top surfaces of the corrugations. The usual flooring **63** made of cork or other suitable floor material is affixed to the top of the filler and corrugated sheets and the entire assembly comprising these various elements is pre-fabricated as a sub-assembly and brought to the car for installation.

As shown in Figs. 1 and 3, angle bars **64** and **65** are positioned along the wall **22** and the top of the stairs **45** respectively, for supporting the floor on its two ends and other angle bars **66** and **67** are positioned along the partition wall **40** and the opposite wall **68** for supporting the floor along its two sides. These angle bars constitute the only means of support for the floor and the weight of the loading is carried through the floor structure to these members. An additional bar **69** shown in Fig. 4 is secured to the angle bar **67** and extends upwardly and around the lower edge of the partition **68** to serve as a seal.

With the arrangement in the duplex car, with a storage space and hopper chute enclosure below the upper room floor, it is desirable to have a portion of this floor removable so as to permit access into the hopper chute enclosure. This is necessary for servicing the piping which is housed in the enclosure. The floor structure forming the subject matter of the present invention is particularly well suited for this type of use since it is self-supporting and consequently there need be no additional stationary floor stringers to block the passage into the hopper chute enclosure when the removable floor unit is out of place. This unit is indicated in Fig. 3 at **70** and an additional supporting angle bar **71** is provided to receive the free end of the removable portion **70** and the end of the stationary portion of the floor **72**. The partition **53** which separates the baggage storage space **51** from the hopper chute enclosure **52** is secured to the lower flange of the angle bar **71**.

As shown in the selected embodiment of the invention the floor sub-assembly is spot welded throughout, that is, the corrugated sheet is welded to the bottom sheet **60** and it has been found that this method of securing the two members is very satisfactory. It is to be understood, however, that the claims are not to be limited by this disclosure since other means may be used with equal satisfaction.

What I claim is:

1. A floor construction comprising a structural framework adapted to bear substantially the whole load on the floor between supports and comprising an upper metallic sheet having corrugations extending from end to end of the floor and formed in the sheet substantially across its entire width and a flat lower metallic sheet secured to the corrugated sheet between the bottoms of the corrugations, whereby the lower sheet reacts in tension to loads imposed on the floor and the sheets cooperate to form a plurality of stiff box girders, in combination with relatively resilient flooring material filling the channels between corrugations and covering the corrugations, the corrugations being left hollow and the flooring material being of such a character as to perform substantially no beam function.

2. A floor construction comprising a structural framework adapted to bear substantially the whole load on the floor between supports and comprising an upper metallic sheet having corrugations extending from end to end of the floor and formed in the sheet substantially across the entire sheet, and a relatively flat lower metallic tension member secured to the corrugated sheet between the bottoms of the corrugations, whereby the lower tension member reacts in tension to loads imposed on the floor and the sheets, the sheets and the tension member cooperating to form a plurality of stiff box girders, in combination with relatively resilient flooring material filling the channels between corrugations and covering the corrugations, the corrugations being left hollow and the flooring material being of such a character as to perform substantially no beam function.

ARTHUR H. LUNDBERG.