

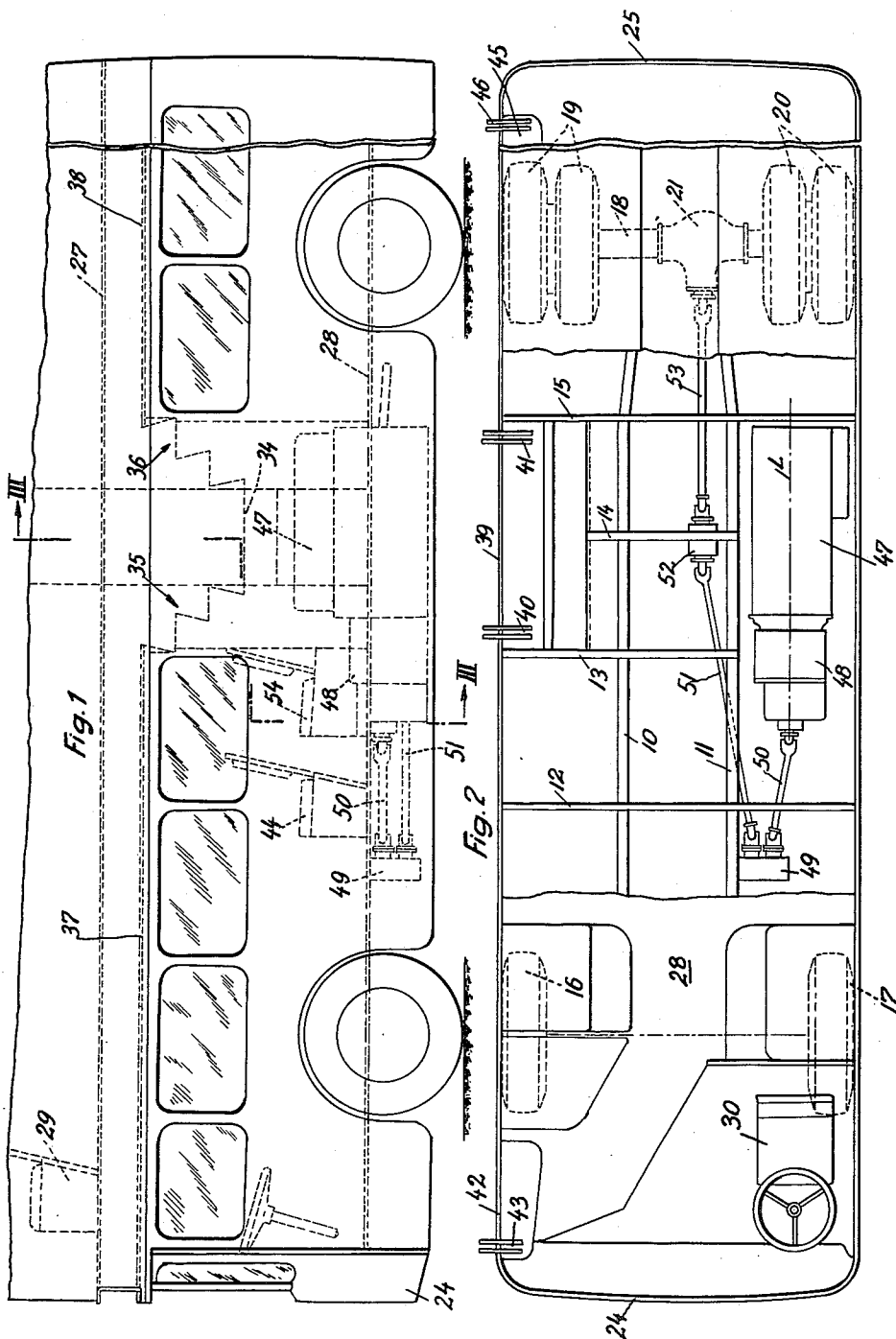
Sept. 18, 1962

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VEHICLE, PARTICULARLY BUS, HAVING A LOWER
DECK AND AN UPPER DECK

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Filed Aug. 25, 1960

2 Sheets-Sheet 1



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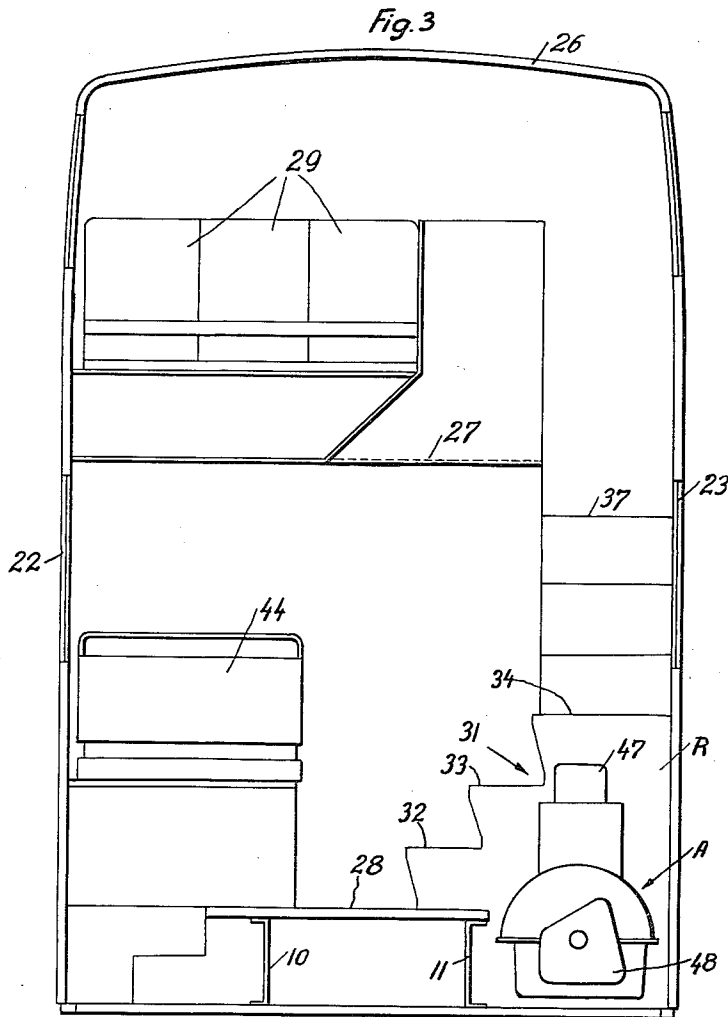
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VEHICLE, PARTICULARLY BUS, HAVING A LOWER DECK AND AN UPPER DECK

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3 Claims. (Cl. 180—54)

My invention relates to a vehicle, more particularly to a motor bus, having a lower deck and an upper deck and, more especially, to an improved disposition of the motor assembly in relation to a stairway connecting the decks.

It is the object of my invention to so re-organize the various elements of the vehicle including the stairway connecting the decks and the motor assembly that as large a number of passenger seats as possible can be accommodated in a vehicle of given dimensions and that large and unobstructed entrances and exits may be provided without interference with the stairway and the motor assembly and that a flight of stairs affords the passengers convenient ascent to the upper deck and descent to the lower deck, the total height of the vehicle being a minimum without unduly curtailing the distance of the roof and of the lower deck from the upper deck, the resulting center of gravity of the entire vehicle being favorably disposed.

These objects have not been attained heretofore in a satisfactory manner.

Where the motor assembly is disposed in the front portion of the vehicle adjacent to the driver's seat, it interferes with the provision of said front portion with a door for the entrance and exit of passengers. Where the motor assembly is provided in the rear portion of the vehicle in lateral position, it permits a door to be provided in such rear section but obstructs such door to a certain extent. Where the motor assembly is disposed below the floor of the lower deck of the vehicle, this floor must be necessarily disposed at a rather high level which is particularly undesirable in vehicles having a lower deck and an upper deck. Moreover, the power output of the motor assembly is restricted by its limited height.

Further objects of my invention and the manner in which these objects have been attained will appear from a detailed description of a preferred embodiment of my invention illustrated in the accompanying drawings. It is to be understood, however, that my invention is in no way limited to such details but is capable of numerous modifications within the scope of the appended claims and that the terms and phrases used in such detailed description have been chosen for the purpose of explaining rather than that of restricting or limiting my invention.

In the drawings:

FIG. 1 is a partial side view of a motor bus designed in accordance with my invention,

FIG. 2 is a plan view of the chassis of the motor bus illustrated in FIG. 1 and

FIG. 3 is a sectional view, the section being taken substantially along the broken line III—III shown in FIG. 1.

The chassis of the motor bus illustrated in FIG. 2 comprises a pair of parallel longitudinal beams 10 and 11 formed by channel bars and a plurality of transverse beams, such as beams 12, 13, 14 and 15, which are intersected by and rigidly connected to the longitudinal beams 10 and 11. Moreover, the chassis includes a front axle having single wheels 16 and 17 and a rear

2

axle 18 which carries twin wheels 19 and 20 and includes the housing of a rear-axle transmission 21.

The body carried by the chassis is composed of substantially plane and parallel upright side walls 22 and 23 (FIGURE 3), a front wall 24, a rear wall 25 and a slightly domed roof 26. The interior of the body is subdivided by a horizontal partition 27 which is disposed substantially half-way between the floor 28 and the roof 26 and constitutes the upper deck of the vehicle provided with rows of passenger seats 29. The driver's seat 30 and the steering wheel in front thereof are disposed in the left-hand front corner of the body directly in front of the wheel 17.

A stairway 31 connects the central portion of the lower deck 28 with the upper deck 27. The lower section of this stairway 31 is composed of steps 32, 33 and 34 each of which extends in the longitudinal direction of the bus between the central vertical longitudinal plane and the wall 23, the lowermost step 32 being closest to the central plane, whereas the uppermost step 34 of this group of steps adjoins the wall 23. Two groups of steps 35 and 36, FIG. 1, lead from the step 34 forwardly and rearwardly, respectively, to aisles 37 and 38 associated with the upper deck and extending along the side wall 23 so as to afford convenient access to the rows of seats 29.

A wide exit opening 39 adapted to be closed by foldable door sections 40 and 41 is provided in the wall 22 opposite to the steps 32, 33 and 34. An entrance door 42 adapted to be closed by a foldable door 43 is provided in the front portion of side wall 22 in front of wheel 16. Passenger seats 44 are provided on the floor 28 in convenient relationship to the stairway and to the entrance and exits. Another exit 45 adapted to be closed by a foldable door 46 may be provided in the rear section of the side wall 22, if desired.

A motor assembly A composed of an internal combustion engine 47 having at least one row of cylinders and of a speed-change transmission 48 disposed in front thereof is accommodated within the chamber R confined by the lower section 32—34 of the stairway, the longitudinal beam 11 and the side wall 23. Hence, it will appear, that the motor assembly 47, 48 is disposed near the center of the bus laterally of the central, vertical, longitudinal plane of the bus so as to be intersected by a plane coinciding with the lower deck. The longitudinal axis L of the motor assembly 47, 48 extends horizontally parallel to the central, vertical, longitudinal plane of the vehicle.

For connecting the motor assembly with the rear-axle transmission 21 I have mounted an auxiliary transmission 49 on the longitudinal chassis beam 11 in front of and spaced from the motor assembly. This auxiliary transmission is connected with the speed-change transmission 48 by a shaft 50 which includes a pair of universal joints. Moreover, I have provided suitable means including a shaft 51 for connecting the auxiliary transmission 49 with the rear-axle transmission 21. More particularly, such means comprises a bearing housing 52 mounted on the transverse beam 14 and accommodating a horizontal stud shaft which is connected by the shaft 51 and a pair of universal joints to the auxiliary transmission 49 and is connected by a shaft 53 and a pair of universal joints with the rear-axle transmission 21. The auxiliary transmission 49 preferably includes a pair of stud shafts and meshing spur gears rigidly mounted thereon.

The disposition of the speed-change transmission 48 in front of the internal combustion engine 47 affords the advantageous possibility of mounting a row of seats 54 facing in forward direction directly above the transmission 48.

3

From the above description it will appear that the space beneath the section 32-34 of the stairway has been utilized for the accommodation of the motor assembly. As a result, the motor assembly does not interfere with the provision of any of the other elements of the vehicle.

The embodiment described hereinabove is capable of numerous modifications. Thus, the vehicle may be constructed as a railway vehicle by substituting railway wheels for the wheels having pneumatic tires. My invention is also applicable to trolley cars and to motor boats.

From the foregoing it will be seen that this invention is one well adapted to attain all of the ends and objects hereinabove set forth, together with other advantages which are obvious and which are inherent to the disposition.

While the invention has been described in connection with a preferred embodiment thereof, it will be understood that it is capable of further modification, and this application is intended to cover any variations, uses, or adaptations of the invention following, in general, the principles of the invention and including such departures from the present disclosure as come within known or customary practice in the art to which the invention pertains, and as fall within the scope of the invention or the limits of the appended claims.

What I claim is:

1. In a vehicle having a lower deck and an upper deck, the combination comprising a motor assembly including an internal combustion engine and a change-speed transmission mounted in front of said engine, said motor assembly being disposed near the center of said vehicle laterally of the central, vertical, longitudinal plane of the vehicle so as to be intersected by a plane coinciding with said lower deck, said motor assembly having a longitudinal axis extending essentially parallel to said central, vertical, longitudinal plane, a stairway leading from said lower deck to said upper deck and having a lower section

4

tion extending over said motor assembly, said lower section including a plurality of steps each extending essentially in the longitudinal direction of the vehicle, an auxiliary transmission below said lower deck and in front of said change-speed transmission, a shaft connecting said auxiliary transmission to said change-speed transmission, a rear axle transmission, and means including shaft means connecting said auxiliary transmission with said rear axle transmission.

2. In a vehicle having a lower deck and an upper deck, the combination comprising a motor assembly including an internal combustion engine and a change-speed transmission mounted in front of said engine, a stairway leading from said lower deck intermediate the longitudinal ends thereof to said upper deck, said stairway having a lower section extending substantially transversely to the longitudinal direction of said vehicle, said motor assembly being positioned beneath said lower section of said stairway and at least partially above the plane of a floor portion of said lower deck, said motor assembly having its longitudinal axis extending essentially in the longitudinal direction of the vehicle, an auxiliary transmission disposed in front of said change-speed transmission, a shaft connecting said change-speed transmission to said auxiliary transmission, a rear axle transmission, and means connecting said auxiliary transmission to said rear axle transmission.

3. The combination defined in claim 2, further comprising forwardly facing seat means positioned essentially directly above said change-speed transmission.

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