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(54) SELF-SUPPORTING VEHICLE BODY WITH FRONT
LONGITUDINAL BEARERS

(71) We DAIMLER-BENZ AKTIEN-GESELLSCHAFT, of Stuttgart-Untertürkheim, Germany, a Company organised under the laws of the Federal Republic of Germany, do hereby declare the invention for which we pray that a patent may be granted to us and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to improvements upon or modifications of the invention claimed in our Patent Application No. 21,591/78 1600714 of even date, that is a vehicle structure comprising a self-supporting vehicle body and front longitudinal bearers abutted on an end wall of the body, which wall, in regions abutted by respective said bearers, is so bulged out locally in the direction towards the front of the vehicle as to present an inherently stiff formation, each said bearer being forked or having a forked bearer mounted thereon at its approach to the respective stiff formation and the fork arms being shaped so that they at least partially embrace that formation.

Into each end-wall region thus stiffened, large forces can be introduced over a large surface area through the individual fork arms without giving rise, even with small total deformations, to premature rearward displacement in the end-wall region or of the flooring below the pedals. At the same time, each front longitudinal bearer can be stiffened in the region of attachment of the vehicle steering means.

It is an object of the present invention, in development of the aforesaid region of connection of the front bearers to the end wall, to provide a solution by which the requirements are satisfied with a relatively simple construction.

According to the invention, a vehicle structure comprises a self-supporting motor-vehicle body and front longitudinal bearers abutted on an end wall of the body, which wall, in regions abutted by respective said bearers, is so bulged out locally in the direction towards the front of the vehicle as to present an inherently stiff formation, each

said bearer being forked or having a forked member mounted thereon at its approach to the respective stiff formation and the fork arms being shaped so that they at least partially embrace that formation, there being four said arms of which two, lower, arms, which include an acute angle, lead to a floor part of the body and two, upper, arms end in the region of the stiff formation.

The arms may form parts of a cap set upon the stiff formation and adjoined by the respective longitudinal bearer. Preferably the cap is set upon the said formation with a sandwiched intermediate layer.

A further increase of stiffness can be attained if each formation is extended at the side to a front-wall pillar and is connected by way of an abutment surface, formed on it, to a transmission tunnel, the abutment surfaces being connected together.

It is advantageous if the upper envelope surface of the stiff formation extends substantially parallel to the steering column which is attached to the inside of the said surface. In this manner, despite simple steering-shaft guidance, the size of the foot space is only slightly reduced.

Preferably the arms are each of closed hollow section completed, in the region of the stiff formation, by a wall thereof.

One embodiment of the invention by way of example will now be more fully described by reference to the accompanying diagrammatic drawings, in which:

Fig. 1 is a half plan view of a connection region of a front longitudinal bearer,

Fig. 2 a side elevation thereof, and

Fig. 3 a front elevation thereof.

A private passenger motor car, of which part is indicated by chain lines, has on each side of its central longitudinal axis 1 (Fig. 1), a front longitudinal bearer 2 which adjoins the front end wall or bulkhead 3. The wall 3 is bulged forwardly in the region of each bearer to the shape of a frustum of a pyramid, thus providing a stiff, shape retentive, formation 4, which is at least partially embraced by four arms 5, 6, 7 and 8 prolonging the longitudinal bearer 2, but bent or offset outwardly in

relation thereto. Each arm may be made of one or more parts. In this manner, the supporting capacity or strength of this front-wall zone, abutting at the side on a front-wall pillar 16, is decisively improved.

Whereas upper arms 5 and 6 end in the region of the stiff formation 4, two lower arm 7 and 9 extend beyond the said formation and adjoin an underfloor 9 of the vehicle. Towards the central axis 1, each stiff formation 4 has formed on it an abutment surface 10, which adjoins the usual transmission or gearing tunnel 11. For increasing transverse stiffness, the surfaces 10 are connected together by a stay 12 (Figs. 1 and 3). The space at 13 (Fig. 1) thus divided off may serve for the accommodation of a unit or units such, for instance, as vehicle heating equipment.

As is evident from Fig. 2, the upper envelope surface 14 of each formation 4 extends substantially parallel to the axis 15 of the steering shaft whose enclosing column or tube, not shown, can then be secured in simple fashion to the inside of the envelope. The two envelope surfaces 14 may be made in one piece or connected together to make one piece, the connecting portions then serving the purpose of the stay 12.

Instead of the arrangement illustrated, use may be made, for each formation 4, of a cap set upon the said formation, the arms 5, 6, 7 8 prolonging the longitudinal bearer 2 being formed by surface parts of the cap to which the said bearer extends.

In other respects, the structure may incorporate features similar to features described and/or illustrated in the Specification of either of our Application Nos. 1600714/78 and 1600716/78.

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WHAT WE CLAIM IS:—

1. A vehicle structure comprising a self-supporting vehicle body and front longi-

tudinal bearers abutted on an end wall of the body, which wall, in regions abutted by respective said bearers, is so bulged out locally in the direction towards the front of the vehicle as to present an inherently stiff formation, each said bearer being forked or having a forked member mounted thereon at its approach to the respective stiff formation and the fork arms being shaped so that they at least partially embrace that formation, there being four said arms of which two, lower, arms which include an acute angle, lead to a floor part of the body and two, upper, arms end in the region of the stiff formation.

2. A structure according to claim 1, wherein the arms form parts of a cap set upon the stiff formation and adjoined by the respective longitudinal bearer.

3. A structure according to claim 1 or 2, wherein each stiff formation extends at the side as far as a front wall pillar and is connected by way of a shaped abutment surface to a transmission tunnel, the abutment surfaces being connected together.

4. A structure according to any one of claims 1 to 3, wherein the upper envelope surface of the stiff formation extends substantially parallel to the steering column which is attached to the inside of the said surface.

5. A structure according to any one of claims 1 to 4, wherein the arms are each of closed hollow section completed, in the region of the stiff formation, by a wall thereof.

6. A vehicle structure substantially as hereinbefore described with reference to the accompanying drawings.

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Fig 1

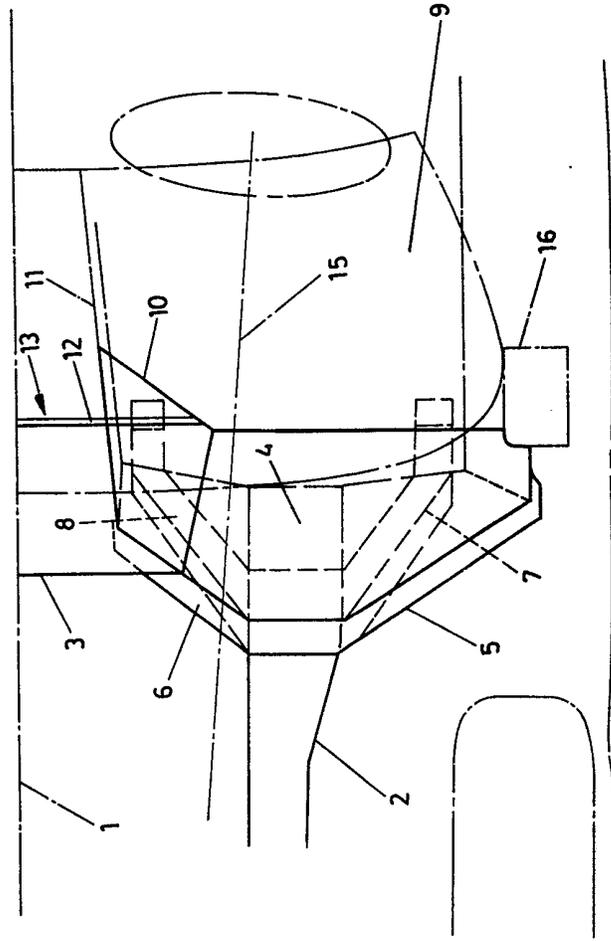


Fig. 2

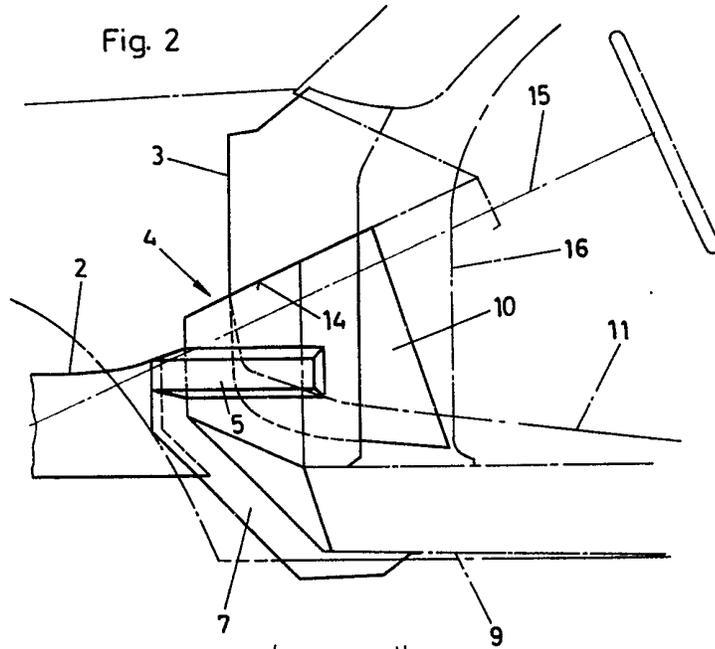


Fig. 3

