

RESERVE PATENT SPECIFICATION

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COMPLETE SPECIFICATION.

Improvements in, or relating to, Motor Road and like Vehicles.

I, THOMAS EDMUND KILLEEN, a British Subject, of Tudor Cottage, Moor Hall Park, Four Oaks, Warwickshire, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement :—

This invention has reference to motor road and like vehicles, and, more particularly, to the construction and the method of assembly of such vehicles.

The principal object of the present invention is to provide a new or improved vehicle construction which obviates the necessity of incorporating separate body and chassis units in a motor vehicle, and in which the body has a maximum torsional strength, minimum weight, and a clean external shape.

In accordance with the said invention, a motor road vehicle comprises a skeleton framework which consists of a plurality of annular hoops disposed transversely of and at right angles to the length of the vehicle and spaced apart at preselected intervals, and a plurality of longitudinal stringers secured to the peripheries of the hoops and extending between the two endmost of the said hoops, a cladding skin applied to and around the outside of the said framework, being adapted to resist the major proportion of the stresses to which the vehicle is subjected, and a power unit and road wheel suspension assemblies being mounted on the frame-work so that stresses originating from the said unit and assemblies are transferred through the framework to the skin.

The hoops may be of T-section, their flanges being arranged around the external peripheries of the said hoops, whereas the stringers may be of top-hat or flanged channel section and may be so assembled to the hoops that at each connection between a hoop and stringer the flanges are located in a common plane thereby enabling the clad-

ding skin, which preferably consists of metal sheets, to be riveted, welded or otherwise secured both to the said flanges without creating irregularities or deformations in the external surface of the said skin.

In accordance with a further feature of the said invention, the skeleton framework produced by the hoops and stringers, is assembled by a method which comprises locating the hoops in their prescribed relative positions upon an internal jig and attaching the stringers to the jig-supported hoops.

In order that the invention may be more readily understood and carried into practice, reference will now be made to the accompanying drawings, wherein :—

Figure 1 is a plan of a motor road vehicle of the sports type;

Figure 2 is a longitudinal sectional elevation of Figure 1;

Figures 3, 4 and 5 are transverse sections taken along the lines *a—*a**, *b—*b**, and *c—*c** respectively of Figure 2; and

Figure 6 is a section, on an enlarged scale, showing a constructional detail.

The vehicle shown in the said drawings, comprises three annular hoops 1, 2 and 3 each of which is disposed transversely of and at right angles to the length of the vehicle, and is fabricated from T-section metal strip, the web of the strip being located internally of the flanges and being apertured at intervals along its length to minimise the weight of the hoops.

The said hoops are spaced apart, in parallel relationship, lengthwise of the body at predetermined intervals and are spanned by six longitudinal stringers 4, 5, 6, 7, 8 and 9; the stringers 4 and 5 span one side, the stringers 6 and 7 span the other side, and the remaining stringers 8 and 9 span the bottom, of the hoops. Each stringer is of top-hat or flanged channel-section, as clearly shown in Figures 3, 4 and 5, and is welded or otherwise permanently connected to each

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of the three hoops in such a manner that at each connection, the flanges of the stringer are located in the same plane as the flanges of a hoop, whereas the channelled portion of the stringer penetrates the web of the hoop, the flanges and web of the hoop being recessed to receive the flanges and channel respectively of the stringer. Alternatively, in any instance where a hoop is of a deeper section than a stringer, each connection may be effected by recessing the flanges of the stringer to receive the flanges of the hoop, the web of which may also be recessed so that it is adapted to embrace the channel portion of the said stringer.

The hoops may be reinforced and braced as desired; thus, in the drawings the hoop 1 is provided with a transverse strut 10 which, like the stringers, is of top-hat section; the hoop 3 is also provided with a top-hat sectioned transverse strut 11, whereas the hoop 2, in addition to the transverse top-hat sectioned strut 12, is provided with channel-section or like struts 13 which support a partition (not shown) whereby the cockpit 14 of the body is separated from the space between the hoops 1 and 2 where the power unit of the vehicle is accommodated.

The side stringers 4, 5, 6 and 7 extend between the two endmost hoops 1 and 3 whereas the bottom stringers 8 and 9 project beyond the said endmost hoops. A bridge-like bracket 15 spans the forwardly projecting portions of the bottom stringers, the said bracket serving as the support and anchorage for a transverse leaf spring forming part of the suspension assembly for the front road wheels of the vehicle, and also for torsion or other rods which are provided with wish-bone or like links also incorporated in the said suspension assembly. An additional bracket 16 secured in the upper part of the hoop 1 is adapted to carry a radiator forwardly of the spring-bracket 15.

Between the hoops 1 and 2, the two bottom stringers carry a transverse bearer 17, also of top-hat section; brackets are mounted on the bottom stringers 8 and 9 at each end of the bearer 17 and also in the bottom of the cockpit 14 for supporting the engine, fly-wheel and gear box assembly or unit (herein referred to as the power unit) of the vehicle.

An inverted semi-circular arch 18, of any desired shape in cross-section, spans the two upper side stringers 4, 6 between the hoops 2 and 3, the said arch having a transverse strut 19; one purpose of the said arch is to carry the instrument panel of the vehicle.

Struts 20, 21 are secured to and between each of the two side stringers 4, 5 and 6, 7 internally of the cockpit, and the rear struts 21 provide anchorages for the forward ends of top-hat sectioned members 22 of which the rearward ends are anchored to the hoop

3 and which, together with the lower side stringers 5 and 7, provide anchorages for brackets adapted to carry quarter-elliptic leaf springs incorporated in the rear road-wheel suspension assembly.

A transverse auxiliary frame 23 anchored to the lower side stringers and the bottom stringers, and brackets 24 anchored to the said side stringers, are provided within the cockpit and are adapted to be spanned by coil-springs or equivalent seat-supporting members. The rearmost hoop 3 is provided with a partition which serves as a support for the back or backs of the seat or seats, and closes the rear of the cockpit.

The above-described assembly of hoops, stringers and arch form a skeleton structure to and around the outside of which metal sheets are secured to provide the external skin. Thus, one sheet 25, which spans the hoops 1 and 2 extends outwardly from each bottom stringer, upwardly of the corresponding side of the skeleton structure, to a position above the upper side stringer 4 (or 6). The sheet is riveted to each of the three stringers over which it stretches, its lower edge is folded around the edge of the inner flange of the bottom stringer (see Figure 3) and its forward and rearward edges overlap and are riveted to the adjacent flanges of the said hoops 1 and 2. A sheet 26 which spans the hoops 2 and 3, is likewise applied and secured to each side of the skeleton structure. Sheets 27, which extend from the hoop 1 to the hoop 3, span the bottom stringers 8 and 9 and are secured to the latter in any desired manner, an aperture 28 being formed therein between the hoops 1 and 2 so that the engine sump, which projects below the level of the stringers 8, 9, does not foul the said sheets. One or more sheets is or are formed into a cowl 29 which is riveted to and extends forwardly of the foremost hoop 1, whereas additional sheets are formed into a tail-member 30 which is riveted to and extends rearwardly of the rearmost hoop 3.

The cockpit is partially covered by an apertured sheet 31 which spans and is riveted to the upper portions of the hoops 2 and 3 and the arch 18. The forward and rearward edges of the sheet 31 are folded around the forward and rearward flanges of the hoops 2 and 3 respectively, whereas the edge of the aperture therein is folded around a rod 32 which is bent to the shape which it is desired to impart to the mouth of the cockpit and which imparts the necessary strength and rigidity to the said aperture edge.

Finally, the engine space between the hoops 1 and 2 is covered by a removable sheet 33 which is supported at its forward and rearward ends upon padded lugs 34 (of which one is shown in Figure 6) secured to the said hoops; any suitable means may be

provided for holding the removable sheet in position; for example, its forward end may be provided with pegs which engage below the rearward flange of the foremost hoop 1 and/or in holes formed in the web of the said hoop, whereas at its rearward end and adjacent each of its lower edges, the said sheet may be provided with one component part of a catch of which the other component is secured to the upper edge of the corresponding side sheet 25.

The skeleton framework produced by the hoops 1, 2 and 3 and the stringers 4, 5, 6, 7, 8 and 9 is assembled or built upon a jig which comprises a central vertical pillar or post and three systems of horizontal arms. Each arm system may include any desired number of arms which radiate from a collar surrounding the pillar, the said collar being adjustable lengthwise of the pillar and being provided with a clamp whereby it is adapted to be secured in its adjusted position.

The free ends of the arms in each system incorporate additional clamps or equivalent expedients for receiving and securing one of the hoops. Thus by adjusting the three arm systems, the hoops carried thereby may be spaced and held at predetermined spaced intervals apart whereupon the stringers may be welded or otherwise permanently secured to and around the peripheries of the hoops, and the skeleton framework thereby produced may be released from the jig and is laid upon trestles, jacks or other convenient carrying means where the auxiliary skeleton members such as the bearer 17, arch 18, struts 20, 21 and spring supported members and also the power unit, road-wheel suspension assemblies, and other components of the vehicles may be fitted.

It is to be understood that the number of hoops and stringers incorporated in the skeleton framework structure may be varied as desired to suit the dimensions of the vehicle which it is to be built. Also by suitably proportioning the external configurations and the relative areas of the hoops any desired streamlined or other shape may be imparted to the final body structure.

What I claim is:—

1. A motor road vehicle comprising skeleton framework consisting of a plurality of annular hoops which are disposed transversely of and at right angles to the length of the vehicle and are spaced apart at pre-selected intervals, and a plurality of longitudinal strings which are secured to the peripheries of the hoops and extend between the two endmost of the said hoops, a cladding skin applied to and around the outside of the said framework, being adapted to resist the major proportion of the stresses to which the vehicle is subjected, and a power

unit and road wheel suspension assemblies being mounted on the frame-work so that stresses originating from the said unit and assemblies are transmitted through the framework to the skin.

2. A motor road vehicle as claimed in Claim 1 wherein each annular hoop is of T-section and the flanges are disposed around the external periphery of the hoop.

3. A motor road vehicle as claimed in Claim 1 wherein each stringer is of top-hat or flanged channel section and is assembled to the hoops in such a manner that it does not project beyond the external peripheries of the said hoops.

4. A motor road vehicle as claimed in Claims 2 and 3 wherein each stringer is secured to the hoops in such a manner that at each connection between the said stringer and one of the hoops, the flanges of the stringer and hoop are located in a common plane.

5. A motor road vehicle as claimed in any one or more of the preceding claims wherein the cladding skin includes a plurality of metal sheets each of which is riveted or otherwise secured to one or more stringers and hoops, one of the said sheets being formed with an aperture which serves as the mouth of the cockpit, and another of the said sheets being removably assembled to the upper part of the hoops, located forwardly of the cockpit to permit of access to the power unit of the vehicle.

6. A motor road vehicle as claimed in the preceding claims wherein at least two stringers are provided in and lengthwise of the bottom of the skeleton framework and serve as supports for the power unit of the vehicle.

7. A motor road vehicle as claimed in Claim 6 wherein a bridge-like bracket spanning the said bottom stringers provides a support for a leaf spring incorporated in the suspension assembly of the front road wheels, and a bracket for carrying a spring incorporated in the suspension assembly of the rear road wheels is secured to at least one of the stringers in each side of the structure.

8. A method of assembling a motor road vehicle as claimed in any one or more of the preceding claims, which comprises locating the hoops in the prescribed relative positions upon an internal jig and attaching the stringers to the jig-supported hoops.

9. An assembly method as claimed in Claim 8 which comprises removing the skeleton framework produced by the assembly of hoops and stringers, from the jig, mounting the said framework upon suitable supports, and thereafter installing the power unit and road-wheel suspension assemblies, and applying the cladding skin, in and to the said framework.

10. A motor vehicle, constructed and arranged substantially as herein described with reference to the accompanying drawings.

5 11. A method of assembling a motor road vehicle, substantially as herein described.

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PROVISIONAL SPECIFICATION.

Improvements in, or relating to, Motor Road and like Vehicles.

10 I, THOMAS EDMUND KILLEEN, a British Subject, of Tudor Cottage, Moor Hall Park, Four Oaks, Warwickshire, do hereby declare this invention to be described in the following statement:—

15 This invention has reference to motor road and like vehicles, and is particularly concerned with the construction of such vehicles and the method whereby the said vehicles are assembled.

20 The principal object of the present invention is to provide a motor vehicle of new or improved construction, having a maximum torsional strength, minimum weight and a clean external shape.

25 In accordance with one feature of the said invention, a motor vehicle comprises a main structure which includes a plurality of hoop-like formers spaced apart, lengthwise of the structure, at preselected intervals, a plurality of stringers which are secured to the peripheries of the formers and extend between the endmost of the said formers, and a cladding skin which is applied to and around the said stringers, and is adapted to resist the major proportion of the stresses to which the structure is subjected when in use.

30 Preferably, the stringers are of top-hat or flanged channel shape in cross section and are assembled to the formers by the crowns thereof so that the cladding skin may be riveted, welded or otherwise secured to the flanges of the said stringers.

40 The stringers also serve as the main supports for the engine, drive transmission and ancillary mechanism of the vehicle, whereas the springs whereby the structure is suspended may be carried by the formers and/or the stringers.

45 In accordance with a further feature of the said invention, the skeleton structure produced by the formers and stringers, is assembled by a method which comprises locating the formers in their prescribed relative positions upon an internal jig and attaching the stringers to the jig-supported formers.

50 Preferably, the cladding skin is applied to the skeleton structure after the latter has been removed from the said jig.

55 In a typical application of the invention

to a motor road vehicle of the sports type, three hoop-like formers are secured upon the internal jig which consists of a central vertical pillar or post and three systems of horizontal arms which radiate from the said pillar, each system being adapted to receive and secure one of the said formers. Each system of arms is adjustable lengthwise of the pillar so that the formers may be spaced at any predetermined intervals apart.

60 The formers consist of metal strip of angle or similar cross-section, the ends of each strip being welded or otherwise permanently secured together to produce the desired hoop-like configuration.

Any desired number of stringers are assembled to the formers whilst the latter are secured upon the jig; the stringers which are secured to the bottom portions of the formers and those which are located in the sides of the skeleton structure, span all three of the formers; an arch, also consisting of a length of angle or similar section metal strip is secured, in parallel relationship to the formers, to the uppermost stringer in each side of the skeleton and certain of the stringers in the upper part of the said skeleton extend between the central and front formers, whereas the remainder of the upper stringers extend between the arch and the rear former. Thus, no stringers span the space between the central former and the arch, so that in the completed body, the driver and one or more passengers may have access to seats which may be supported on the stringers in the sides and/or bottom of the structure.

90 Having assembled the stringers and arch to the formers, the skeleton body so produced is released from the jig arms and is laid upon trestles or other convenient carrying means and the cladding skin is applied to the stringers either before or after the engine, transmission mechanism, suspension springs and the like have been fitted upon the skeleton.

95 It is to be understood that the number of formers incorporated in the skeleton may be varied as desired, the number, generally speaking, being more than three in structures of larger dimensions.

By suitably proportioning the relative

5 areas of the formers, assembling a sheet metal tail piece to, and rearwardly of, the rear former, and a sheet metal cowl to and forwardly of the front former, an efficient streamline shape may be imparted to the finished structure.

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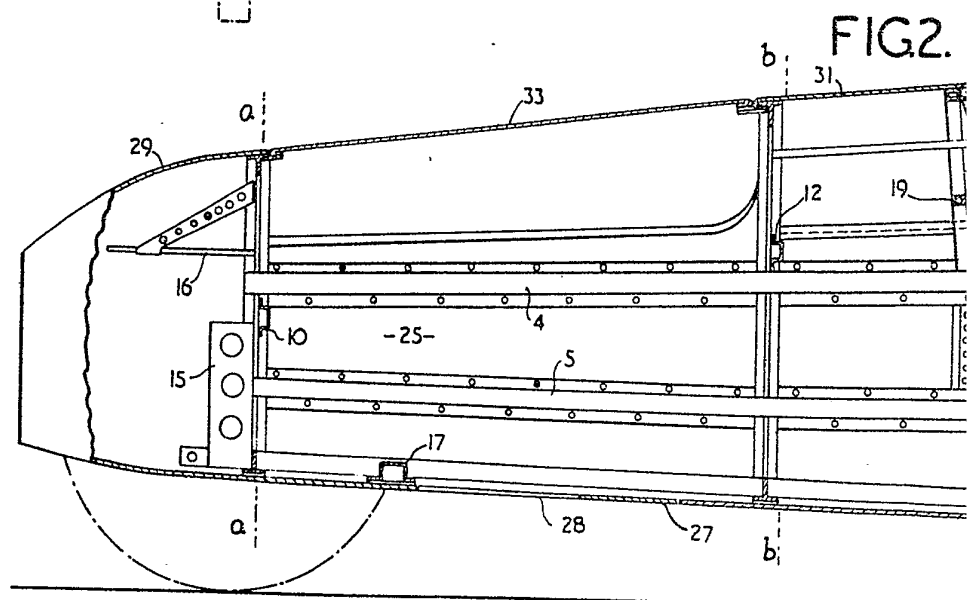
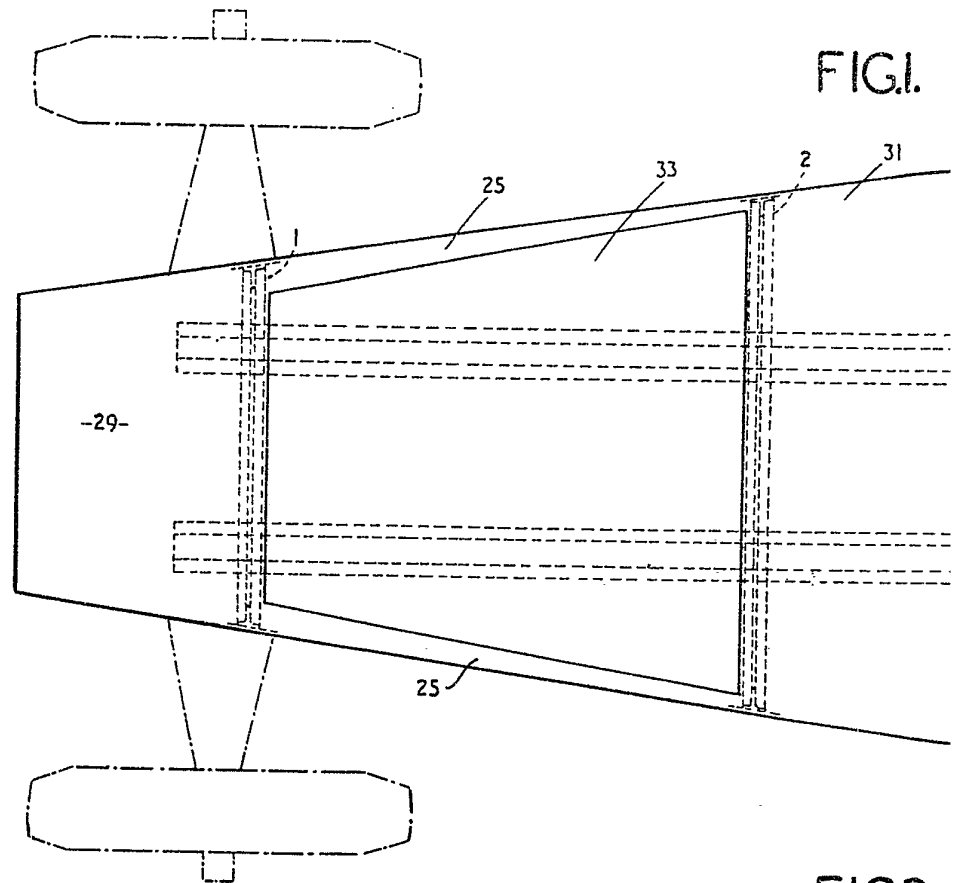


FIG. 1.

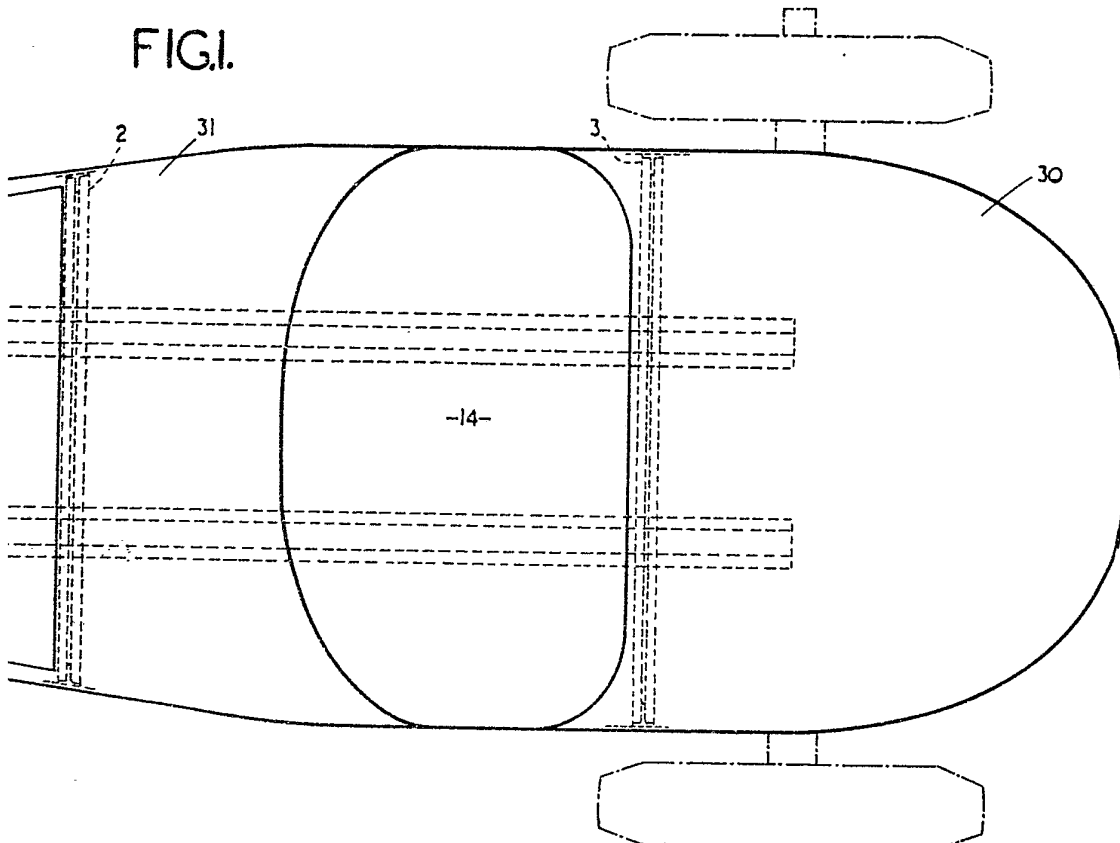
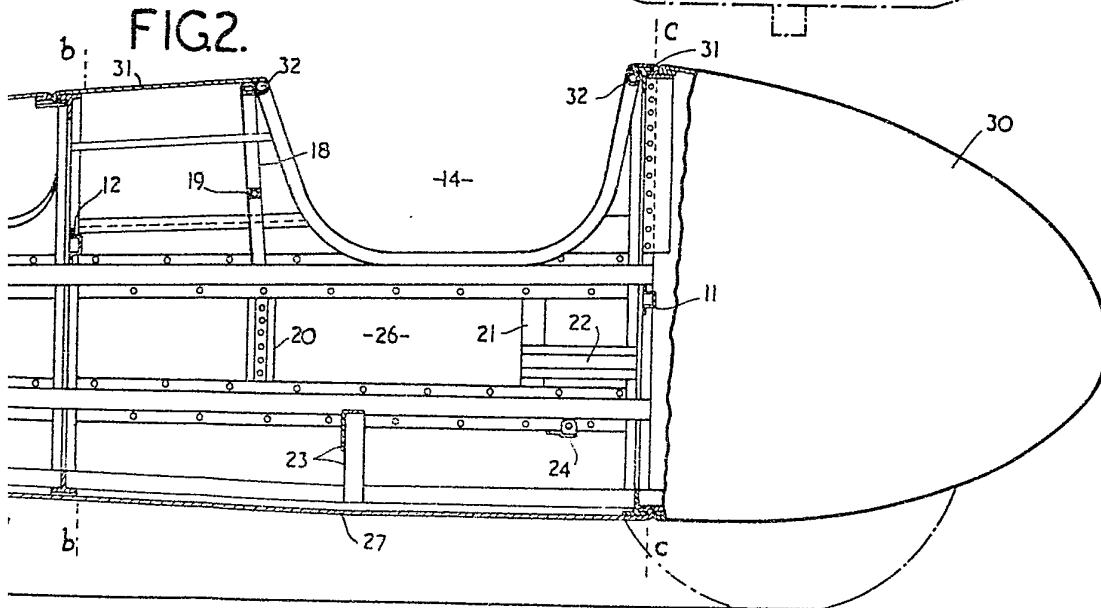


FIG. 2.



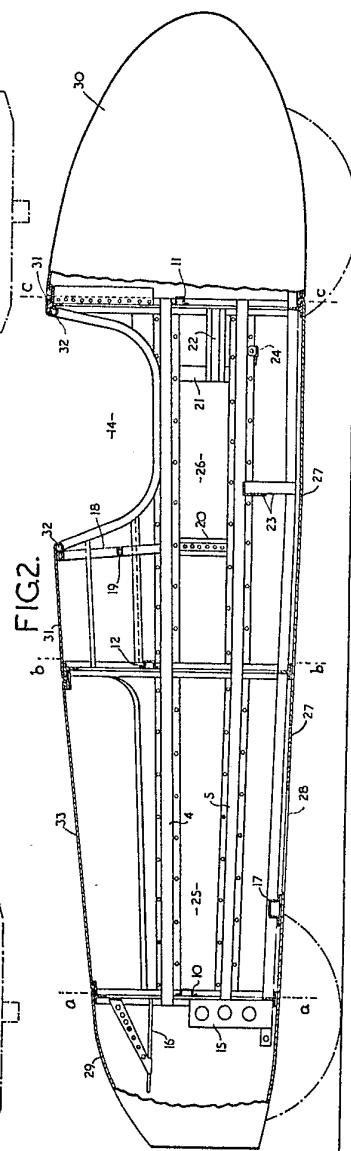
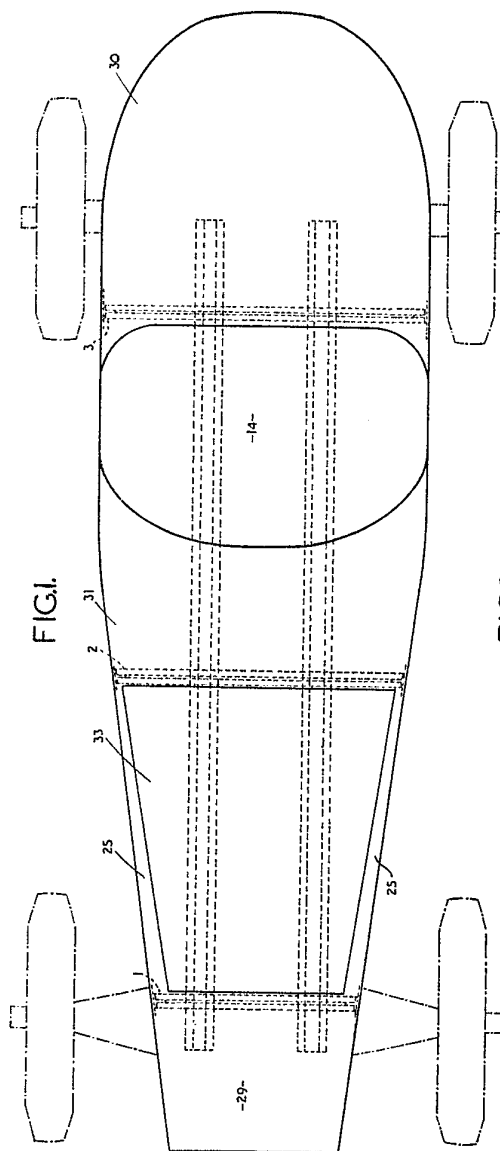


FIG.3.

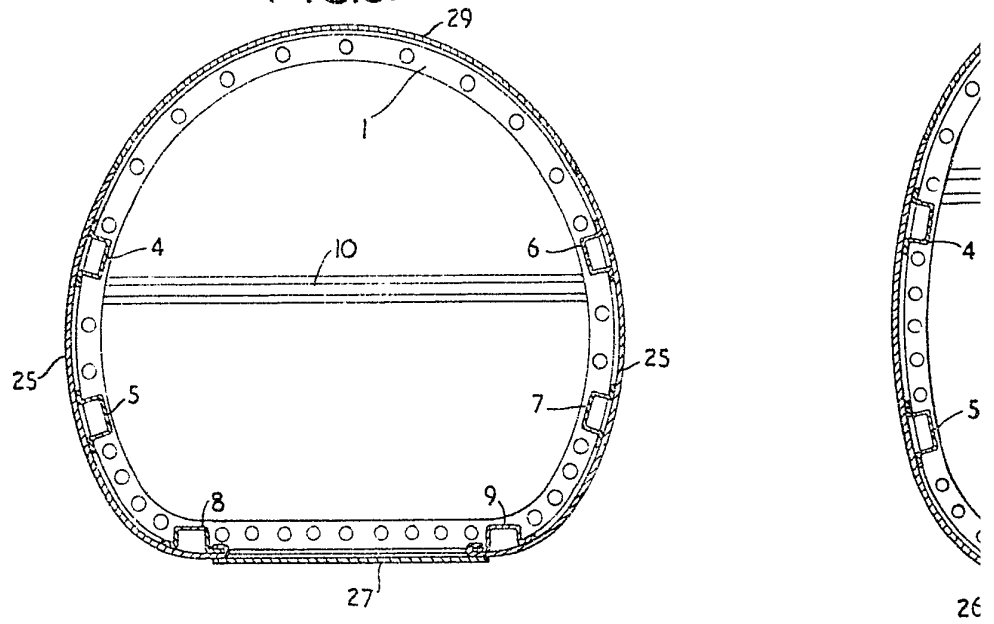


FIG.5.

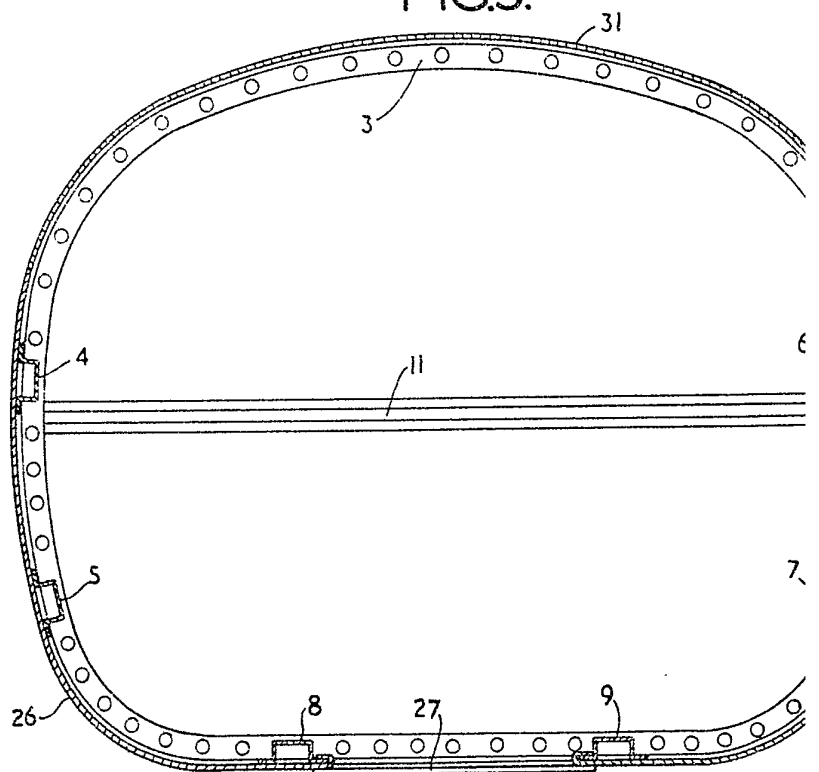


FIG.4.

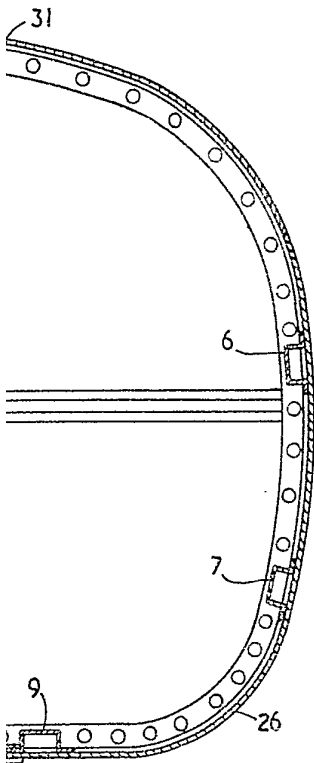
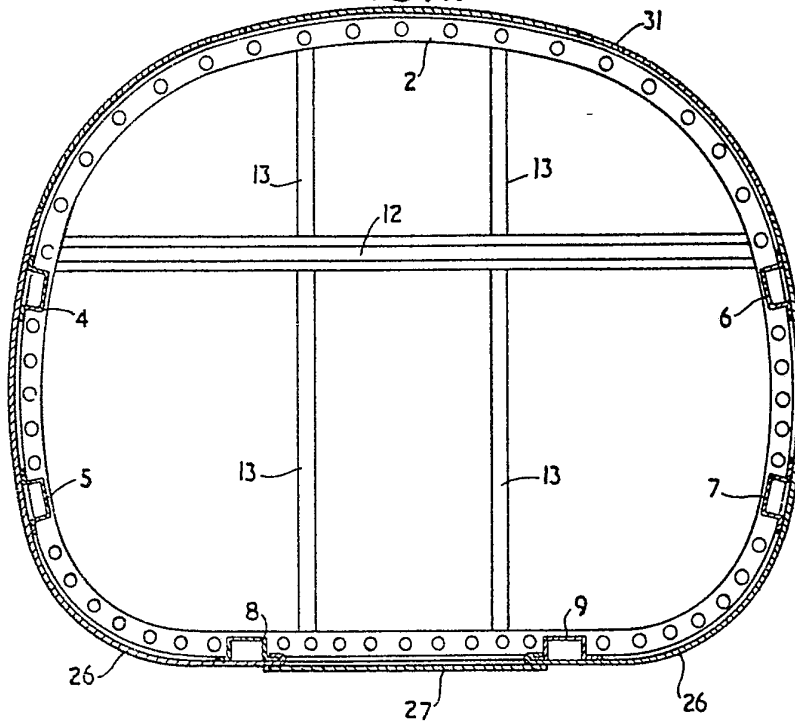


FIG.6.

