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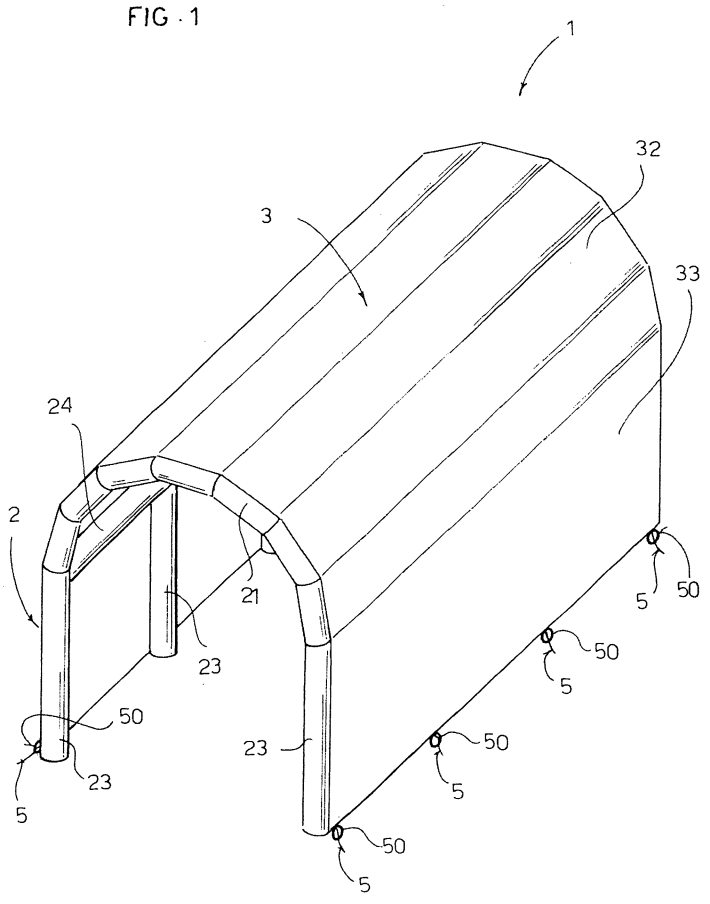
(54) **Shelter for means of transport, particularly campers**

(57) A shelter (1) for means of transport, particular campers, is described, comprising an inflatable supporting structure (2) and a waterproof covering sheet (3) supported by the inflatable supporting structure (2), so as to form a shelter beneath which the means of transport is placed.

FIG. 1



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Description

[0001] The present invention refers to a protection and storage shelter for means of transport in general and for campers in particular, it being understood that the shelter according to the invention can be applied to other means of transport such as boats, caravans, trailers and the like.

[0002] When travelling a vehicle is inevitably exposed to the inclemencies of the weather, such as rain, snow, hail or sun. However, when the vehicle is parked, it is desirable for it to be protected from weather, to avoid rapid wear and damage. This parking can be storage in the months when it is not used, or overnight parking in specially equipped areas.

[0003] For both purposes use is made both of fixed structures, such as shelters made of composite materials, and of knockdown structures, such as protective covering in the form of plasticized sheets which are placed on the vehicle so as to wrap it completely or partially.

[0004] However, fixed shelters are costly and bulky, since they remain assembled permanently and furthermore they require special permits for their realization and specialized personnel for their assembly and possible removal. On the other hand, application and removal of plastic sheets proves complex, long and troublesome for the user and in addition the vehicle is generally inaccessible once the covering sheets have been applied, therefore this is a solution that can be adopted only in cases of storage or the like.

[0005] The need to cover the vehicle is felt to a greater extent in the case of transport means such as campers destined to accommodate users also during night parking. In fact the cover would insulate the inside of the camper better with respect to outside climactic conditions (too hot or too cold). For this purpose, camper owners generally seek covered parking areas and stopping places. However, covered parking areas are rare and in any case costly.

[0006] As far as storage is concerned, this is costly because it entails renting a storage area which is often not adequately protected.

[0007] Furthermore, it often happens that although there are spaces such as gardens and the like available, it is not possible to protect the vehicle simply and cheaply except with means similar to tents, with rigid or semi-rigid structures which are bulky, not easy to transport and must be mounted in a way that takes time and a certain skill.

[0008] Object of the present invention is to overcome the drawbacks of the prior art by providing a shelter for means of transport that is light, transportable and easy to mount and use.

[0009] Another object of the present invention is to provide such a shelter for means of transport that is versatile and suitable to be applied to different types of vehicles.

[0010] Yet another object of the present invention is to provide such a shelter for means of transport that is efficient and able to provide adequate thermal insulation of the vehicle.

[0011] Yet another object of the present invention is to provide a shelter that can be kept in a configuration occupying the least space when it is not in use, in particular easily storable in a luggage compartment of a vehicle.

[0012] These objects are achieved in accordance with the invention with the characteristics listed in appended independent claim 1.

[0013] Advantageous embodiments of the invention are apparent from the dependent claims.

[0014] According to the invention, the shelter for means of transport, in particular campers, comprises an inflatable supporting structure and a waterproof cover sheet disposed on said supporting structure so as to form a shelter within which to store the vehicle.

[0015] Provision of the inflatable supporting structure allows rapid, simple setting-up of the shelter.

[0016] In fact, by simply inflating the supporting structure, the covering sheet is tensioned, so as to take on the shape of the framework of the supporting structure, forming a cover for the means of transport. Furthermore, the supporting structure can be deflated, so as to be in a configuration occupying the least space, so that it can be stored in a special container and transported easily.

[0017] Such a shelter can easily be mounted by any operator in any open space, without any special permit.

[0018] Further characteristics of the invention will be made clearer by the detailed description that follows, referring to a purely exemplifying and therefore non limiting embodiment thereof, illustrated in the appended drawings, wherein:

Figure 1 is a perspective view of a shelter according to the invention in the position of use;
Figure 2 is a perspective scrap view of the supporting structure of the shelter of Figure 1;
Figure 3 is a perspective view, illustrating a main arch and the supporting uprights of the supporting structure of Figure 2;
Figure 4 is a diagrammatic plan view from the inward facing side of a covering sheet of the shelter; and
Figure 5 is a perspective view showing the shelter according to the invention with an opening in the sheet, in which the supporting structure has not been shown for the sake of clarity.

[0019] The shelter according to the invention, denoted as a whole with reference numeral 1, is described with the aid of the figures.

[0020] With reference to Figure 1, the shelter 1 comprises a pneumatic supporting structure or frame 2 supporting a waterproof covering sheet 3.

[0021] As shown better in Figures 2 and 3, the supporting structure 2 comprises at least two arches 21 integral with respective uprights 23 destined to rest on the ground. The arches 21 are connected to each other by means of longitudinal members 22, 24.

[0022] Upper longitudinal members 22 whose ends are connected to respective upper knots 25a of the arch, and longitudinal side members 24 whose ends are connected to respective side knots 25 of the arch are provided.

[0023] By way of example, the supporting structure 2 has four arches 21 arranged parallel to each other and connected at the top by means of three upper longitudinal members 22 and at the sides by means of three longitudinal side members 24 on each side. The bearing structure 2, thus constituted, forms a supporting cage or frame for the waterproof covering sheet 3. In this manner the shelter 1 takes on a substantially tunnel shape and is of such a size as to allow a means of transport such as a vehicle, a caravan, a trailer, a boat, etc. to be accommodated easily.

[0024] The arch 21, the uprights 23 and the longitudinal members 22 and 24, are tubular elements obtained by closing portions of rubberised or plasticised fabric longitudinally, on the bottom end and at the knots 25, 25a. Perfectly tight closure of these elements is obtained with the technology typical of the materials used. In the case of rubberized fabrics, cold vulcanization is carried out with self-vulcanizing solutions after treatment of the surfaces to be closed. In the case of plasticized or polyurethane fabrics, on the other hand, closure is achieved by high frequency welding or by use of special two-component adhesives.

[0025] The tubular elements of the arch 21, of the longitudinal members 22 and 24 and of the uprights 23 are advantageously of the same diameter. Obviously the length and number of the tubular elements making up the supporting framework 2 can vary according to the size of the vehicle to be accommodated and, therefore, of the tunnel to be created.

[0026] As shown better in Figure 2, the supporting structure 2 is obtained by inflating the shaped tubular elements joined to one another. Inflation of the supporting structure 2 takes place by means of one or more inflation and deflation valves 4 situated on one or more tubular elements. By way of example, two valves 4 situated on the uprights 23 are provided. However, a single valve or more than two valves can also be provided and in any case the valve must be positioned so as to be readily accessible, thus advantageously in the bottom part of the uprights 23.

[0027] Electric or manual pumps may be used for inflation. The working pressure of the supporting structure 2 must not be lower than 0.12 BAR. Deflation of the supporting structure 2 takes place by opening the inflation and deflation valves 4 used for inflation.

[0028] The connection and perfect air tightness between all the tubular elements of the supporting structure allows rapid inflation of the entire supporting structure 2, giving the covering sheet 3 the configuration of a tunnel (Figure 1) with a roof having a substantially semi-cylindrical shape 32 and vertical sloping walls 33.

[0029] As shown in Figure 4, the covering sheet 3 is rectangular in shape when it is spread on a flat surface. On the surface of the covering sheet 3 destined to face towards the inside of the shelter are provided a plurality of coupling means 30, such as laces or eyelets, destined to couple with the tubular elements of the supporting structure 2. In addition or as an alternative to the coupling means 30, fixing means such as Velcro strips or press studs able to couple with matching fixing means provided on the tubular elements of the supporting structure 2 may be provided on the sheet 3.

[0030] Furthermore, on the opposed side edges of the sheet 3 are provided guys 5 adapted to be fixed in special rings 50 (Figure 1) disposed near the bases of the uprights 23 of the supporting structure. The rings 50 can be planted in the ground or connected directly to the bases of the uprights 23 which are disposed on the ground.

[0031] As an alternative or in addition to the guys 5, further means of anchoring to the ground can be provided, such as D-shaped eyelets or rings, for anchoring to the ground by means of pickets.

[0032] Even if the figures show a rectangular sheet 3 which, when positioned on the supporting structure 2 forms a tunnel-shaped shelter open at the front and back, it is obvious that the sheet 3 can have a rear portion which closes the rear opening of the tunnel.

[0033] The whole shelter 1, when the inflatable structure 2 is deflated, occupies a minimum space in order to be stored in a suitable container to be positioned, advantageously, in a compartment of the vehicle.

[0034] Figure 5 shows a variant of the sheet of the shelter 1, which has a rectangular opening 35 near a side portion 33 thereof. The opening 35 acts as an entry and exit door for the user of the vehicle that is to be placed under the shelter 1. The opening 35 can be formed by means of two parallel cuts so as to define a rectangular strip of sheet which covers the opening and can easily be moved aside by the user or rolled up to form a roll 36 disposed above the opening 35.

[0035] Even if in the figures a specific tunnel shape of the inflatable supporting structure 2 has been illustrated, it is obvious that it can also be produced with geometries other than that illustrated, according to the various types of camper or requirements.

[0036] In fact numerous changes and modifications of detail with the reach of a person skilled in the art can be made to the present embodiment of the invention without thereby departing from the scope of the invention as set forth in the appended claims.

[0037] Hereunder, by way of example, some tables indicating the main characteristics of the materials that can be

used for production of the shelter 1 are set out.

[0038] Basic characteristics of the rubberised or plasticised fabrics of the inflatable supporting structure:

fabric	polyester or polyamide
weave	cloth
size	1100 dtex

[0039] Characteristics of the waterproofed fabric (rubberised or plasticised) of the inflatable supporting structure:

weight	> 1000 gr/mq (UNI 4818-74 p.3)
breaking load O/T	> 2500 N/5cm (ISO 1421)
joined strip breaking load	breaking outside join (UNI 4818-74 p.6)
resistance to tearing	> 200 N
resistance to temperatures	- 35°C + 70°C
resistance to combustion	self/extinguishing
air permeability	Kpa 200 (iSO 1420)
PI NK STAIN resistance to fungi	no stain
ASTM.E-21-80 resistance to moulds	no growth
resistance to ozone (50 p.p.h.m 12 mm - 30°C - 24h)	resistant

[0040] Characteristics of the covering sheet fabric:

fabric	100% high tenacity polyester, Flame Retardant
resin finish	Waterproof, breathable polyurethane
tensile strength	O/T : 2500 H

[0041] As an alternative to resin finishing, the polystyrene covering sheet can be spread on both sides with a mixture of polymers and/or co-polymers of vinyl chloride with a tensile strength equal or greater than 2,5000 N.

Claims

1. A shelter (1) for means of transport, in particular campers, **characterised in that** it comprises an inflatable supporting structure (2) and a waterproof covering sheet (3) disposed on said inflatable structure (2) so as to form a shelter beneath which the means of transport can be placed.

2. A shelter (1) according to claim 1, **characterised in that** said inflatable supporting structure (2) comprises a plurality of inflatable tubular elements joined together so as to form a cage or framework to support said waterproof covering sheet (3).

3. A shelter (1) according to claim 2, **characterised in that** said inflatable supporting structure (2) comprises at least two tubular arch-shaped elements (21) with respective uprights (23) disposed parallel to each other and connected by at least one tubular longitudinal member (22, 24).

4. A shelter (1) according to claim 3, **characterised in that** said inflatable supporting structure (2) comprises central longitudinal members (22) whose ends are connected to central knots (25a) of the arches and lateral longitudinal members (24) whose ends are connected to lateral knots (25) of the arches.

5. A shelter (1) according to any one of the preceding claims, **characterised in that** said covering sheet (3) has means

for anchoring to the ground, such as guys (5) which protrude from the opposite side edges of the sheet (3) to engage in rings (50) constrained to the ground or to the supporting structure or eyelets (5) disposed in the opposite side edges of the sheet (3) to receive pickets for anchoring to the ground.

6. A shelter (1) according to any one of the preceding claims, **characterised in that** said covering sheet (3) has, in its surface facing towards the inside of the shelter, means for coupling to the supporting structure (2) such as mechanical coupling means (30), such as ties, hooks, eyelets and the like which couple to the tubular elements of the supporting structure (2) or mechanical anchoring means such as Velcro strips or press studs, which couple with matching anchoring means provided on the outer surface of the tubular elements of the supporting structure (2).

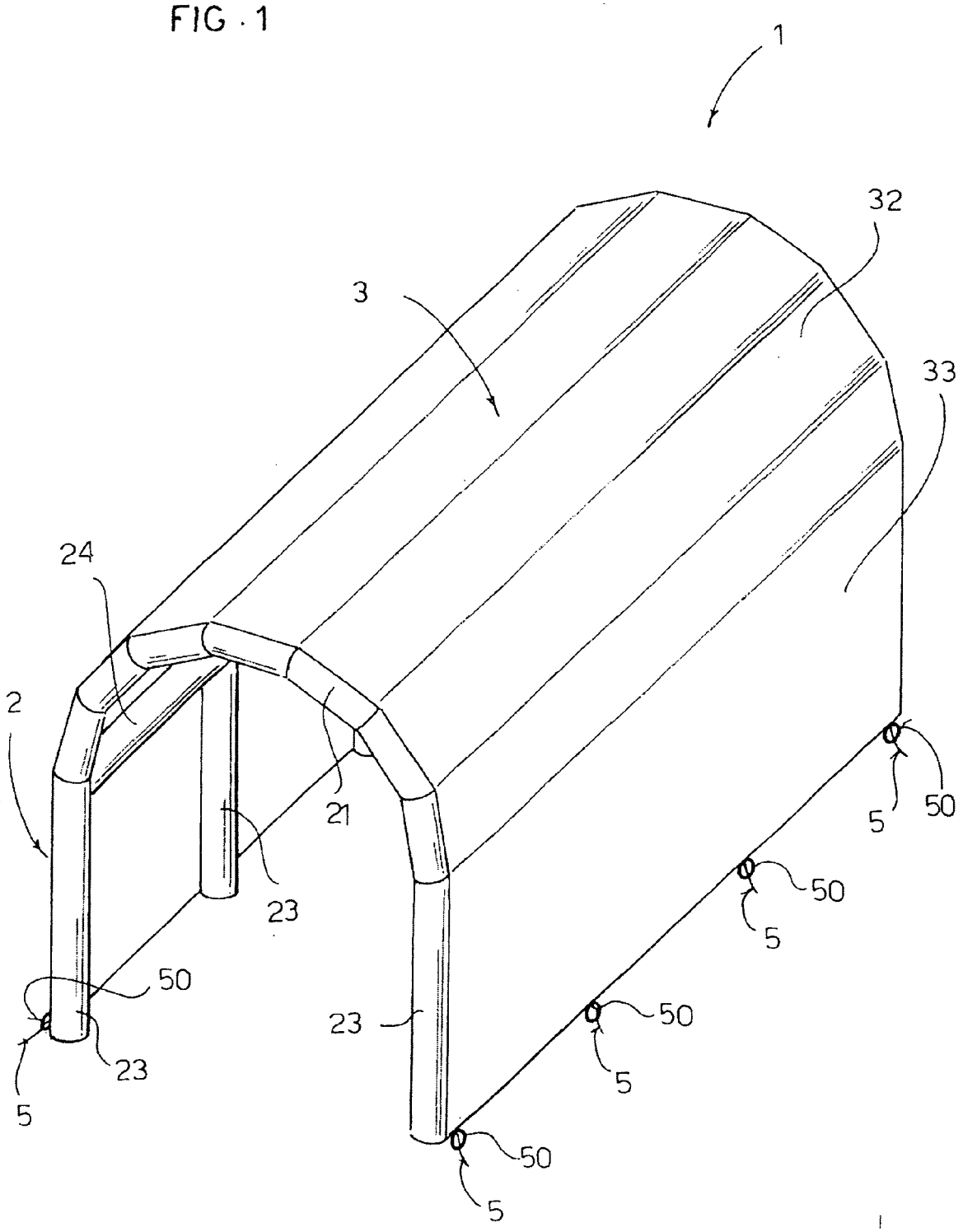
7. A shelter (1) according to any one of claims 2 to 10, **characterised in that** said inflatable supporting structure (2) comprises at least one inflation/deflation valve (4) disposed on the side surface of said uprights (23).

8. A shelter (1) according to any one of the preceding claims, **characterised in that** said covering sheet (3) has at least one opening (35) acting as an entry and exit door.

9. A shelter (1) according to any one of the preceding claims, **characterised in that** said inflatable supporting structure (2) is made of rubberised or plasticised fabric, such as polyester or polyamide.

10. A shelter (1) according to any one of the preceding claims, **characterised in that** said waterproof covering sheet (3) comprises high tenacity polyester fabric, of the flame retardant type, with a tensile strength (O/T) of 2,500 N or greater comprising an impermeable, breathable polyurethane resin finish and a spreading on both sides of vinyl chloride polymers or co-polymers.

FIG . 1



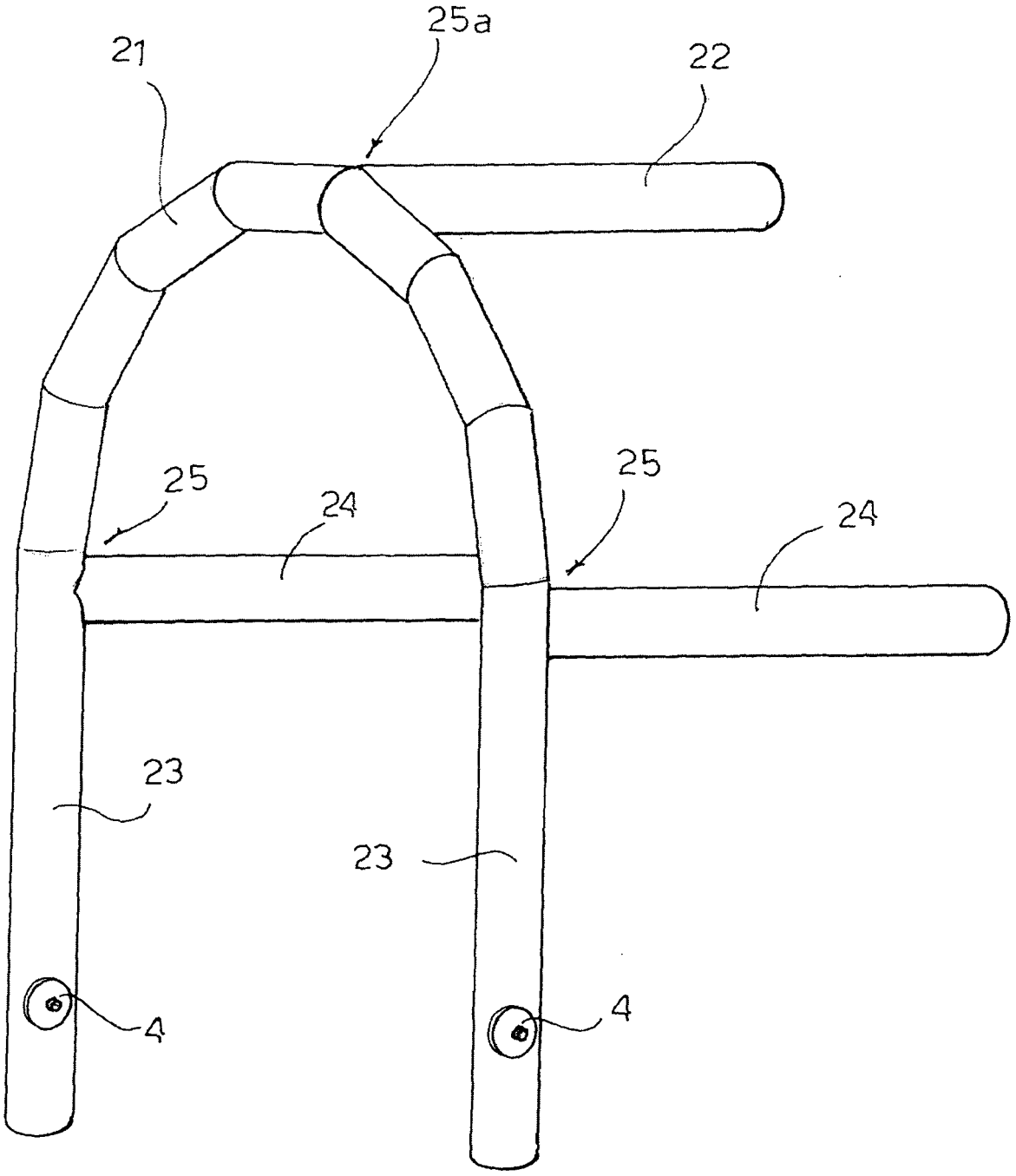


FIG. 2

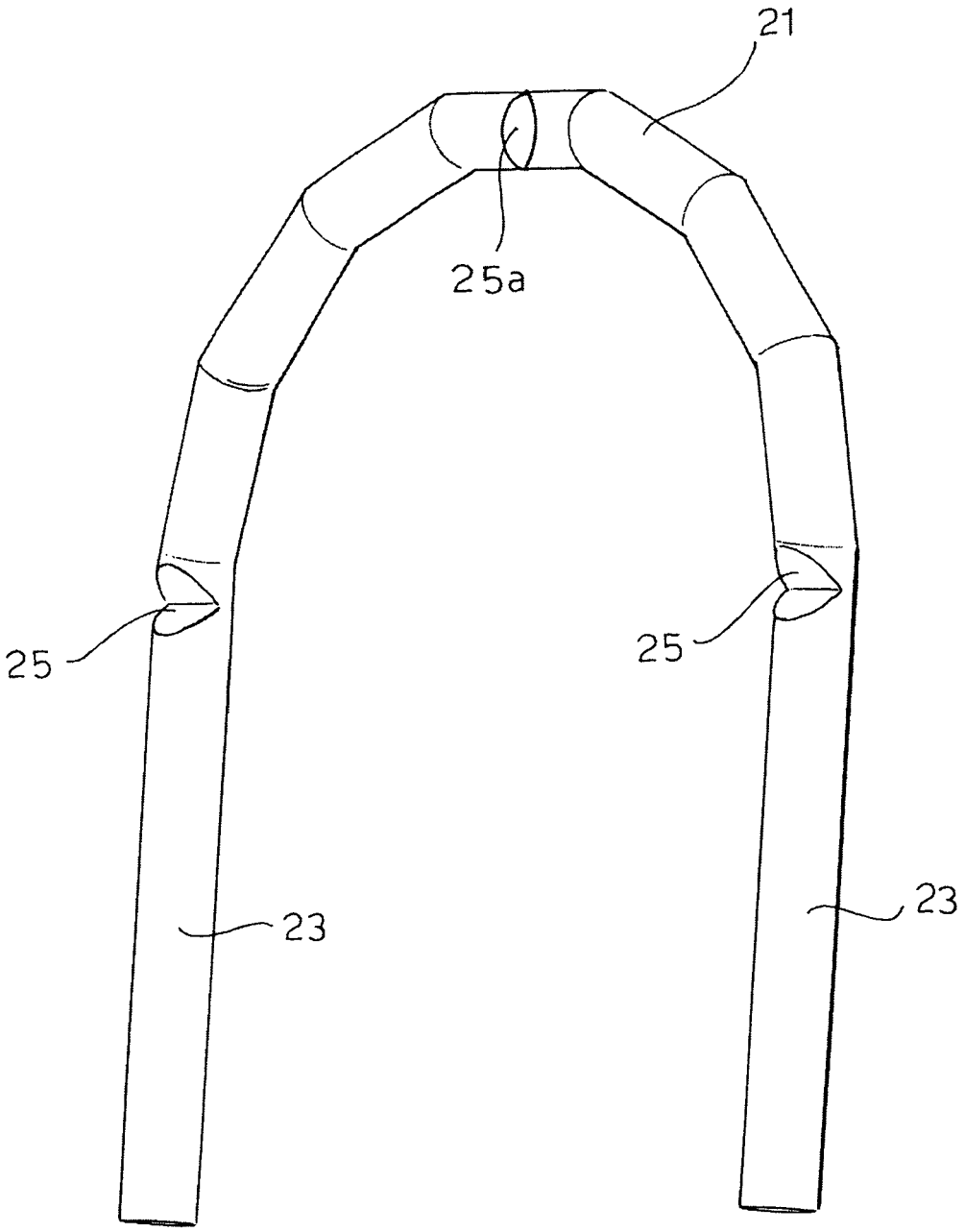


FIG. 3

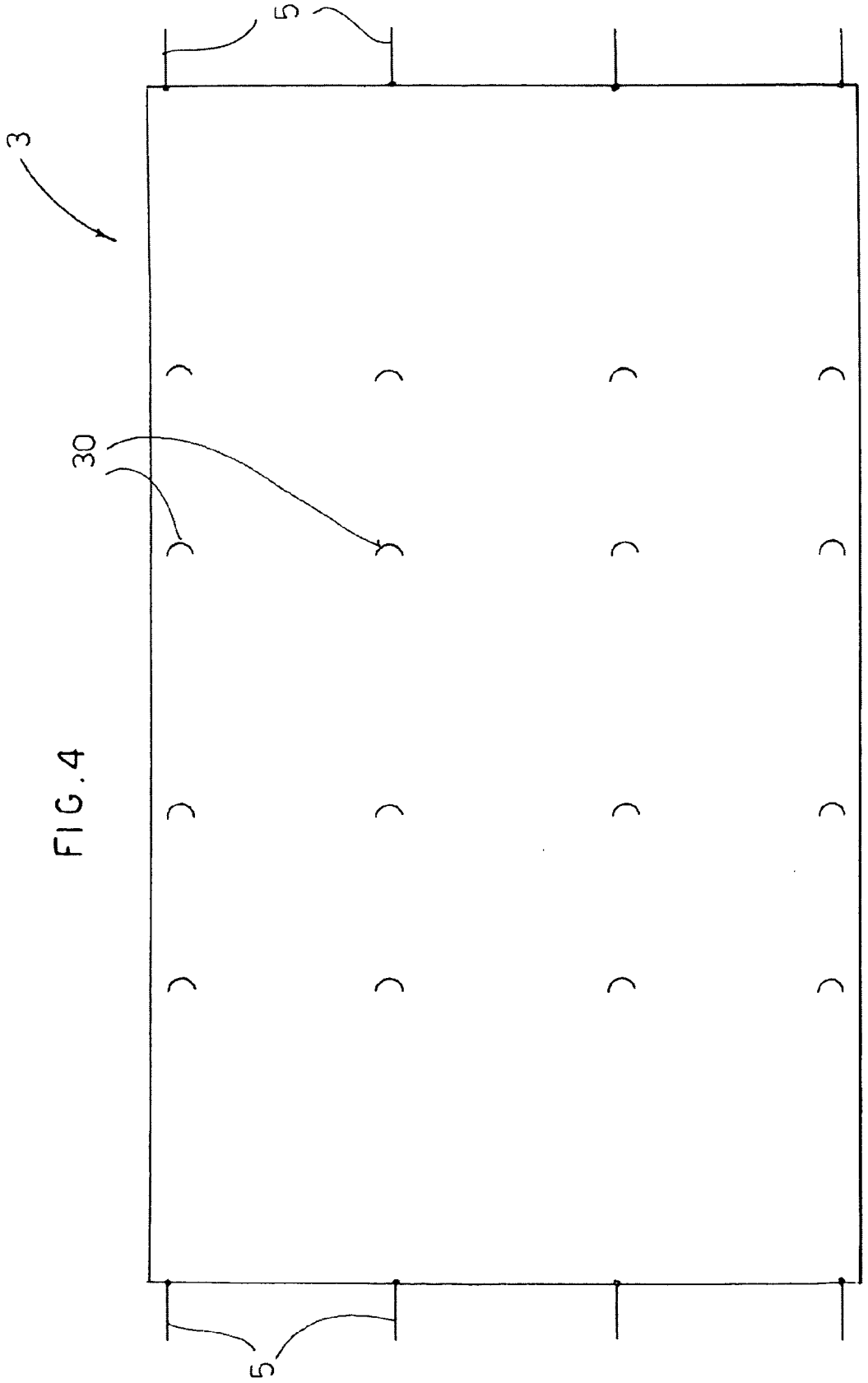


FIG.4

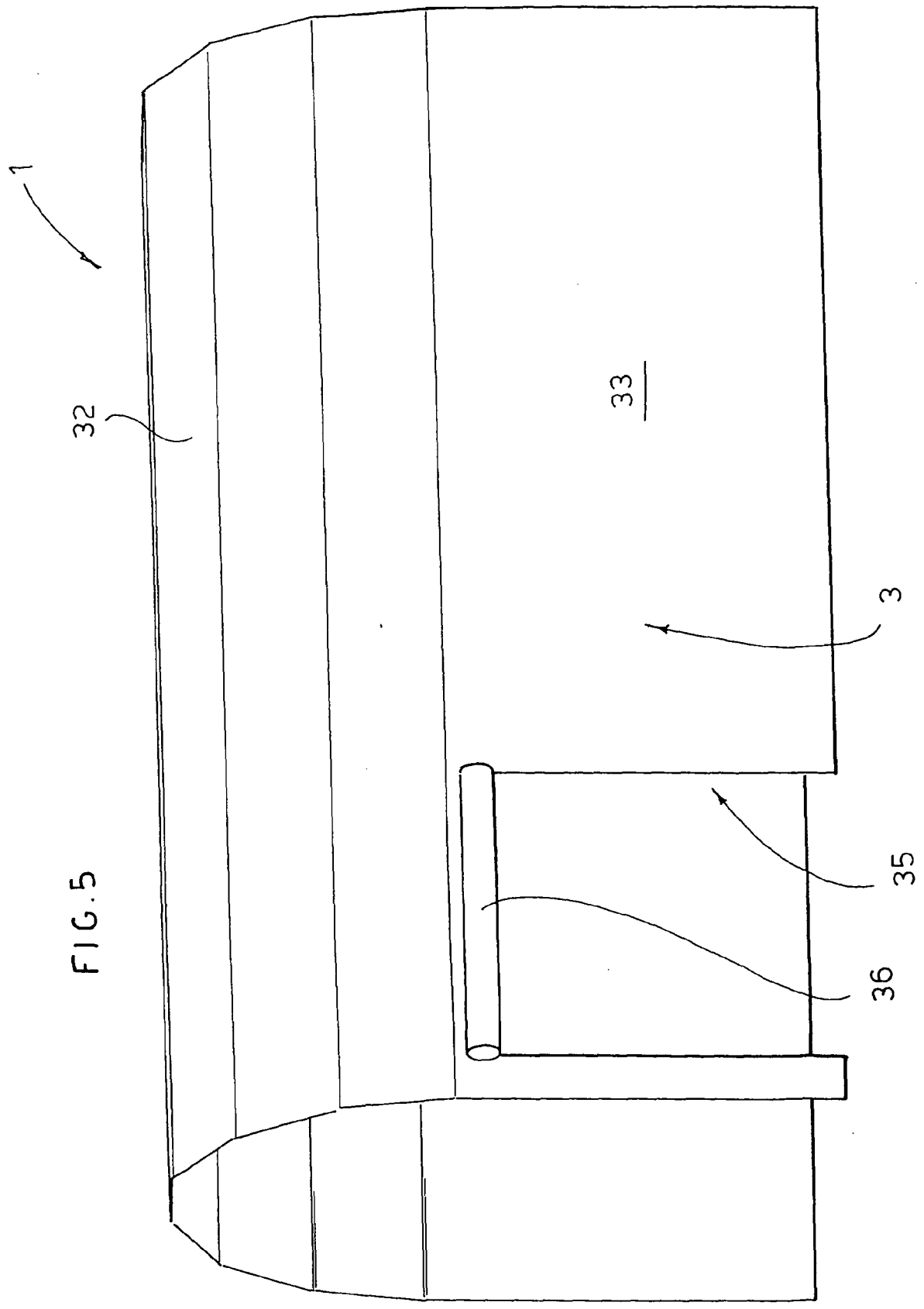


FIG.5