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INFLATABLE BOAT

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CLAIMS

1. An inflatable boat with two parallel side tubes that converge in a truncated bow tip and are closed off by a transverse tube that forms the stern section, and a flat floor that connects them, characterized by the combination of the features:
- 5 a) the side tubes (4), each formed by a straight-cylindrical tube body, have a diameter of the order of $1/4$ to $1/3$ of the greatest width of the boat and a length of three to five times this value and continue in the bow via curved pieces (7) that widen conically to up to $1.1/2$ times their diameter in the bow tip;
- 10 b) the floor (6) that forms a flat lower end surface is made of a double-ply fabric that can be inflated over its entire surface and has two plies that are woven together by connecting threads (16).
- 15 2. The inflatable boat according to claim 1, characterized in that the side tubes (4) are in open connection with the transverse tube (5) and can be inflated together with the latter via a single filling valve (9).
3. The inflatable boat according to claim 2, characterized in that the filling valve (9) is
- 20 arranged in a peripheral area of a tube (4 or 7) facing the floor (6) in comparison to a filling valve (8) provided for inflating the floor.
4. The inflatable boat according to claim 3, characterized in that the filling valves (8, 9) are arranged in the bow.

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INFLATABLE BOAT

5 [0001] The invention relates to inflatable boats with two parallel side tubes that converge in a truncated bow tip and are closed off by a transverse tube that forms the stern section, and a flat floor that connects them.

[0002] Inflatable boats distinguish themselves from rigid boat constructions primarily by their low weight and low storage space requirements. Since they can also be easily
10 installed and launched into the water due to the simple inflation mechanism and can also be dismantled again with little effort in a way that is suitable for packaging, they advantageously offer themselves for use, particularly, in such cases, where easy transport and rapid operational readiness are in the centre of attention. For example, this applies above all to military use, for technical emergency services, fire services, expeditions, and
15 the like, where the high resistance to impacts and scratches and the low draught also play an important role as specific properties of inflatable boats. Inflatable boats are already known that meet the requirements applicable to a high degree and that have also proven themselves well under a wide variety of conditions. Increasing demands on lightweight construction and collapsibility in conjunction with the simultaneous emerging need for
20 extended application possibilities for inflatable boats have, however, given rise to desires for improvements in this direction. The general object of the invention is to close the gap in demand that has arisen from diverse practical experience by introducing a new type of inflatable boat construction.

[0003] According to the invention, the combination of the following features is provided
25 to realize the object for inflatable boats of the type mentioned at the beginning:

- a) the side tubes, each formed by a straight-cylindrical tube body, have a diameter of the order of $\frac{1}{4}$ to $\frac{1}{3}$ of the greatest width of the boat and a length of three to five times this value and continue in the bow via curved pieces that widen conically to up to $1\frac{1}{2}$ times their diameter in the bow tip;
- 30 b) the floor that forms a flat lower end surface is made of a double-ply fabric that can be inflated over its entire surface and has two plies that are woven together by connecting threads.

[0004] The invention creates an inflatable boat that, in terms of its construction, meets all the requirements for equipping and mobilizing individuals as well as for use as a buoyancy and swimming device in the broadest possible context, for example, as a working aid for engineer units or in disaster control. The specific coordination of the side gunwale tubes with the basic dimensions of the boat body and their all-round connection with the insertion of a stern side transverse tube that is preferably in open connection with the side tubes and is inflatable together with them via a single filling valve, result in an unexpectedly favourable ratio of the dead weight to the holding and load-bearing capacity of the fully inflated boat with a relatively large usable interior area, wherein the ratio can be further positively shifted by possibly dispensing with otherwise necessary stiffening and reinforcing elements.

[0005] For this purpose, the manufacture of the floor from so-called spacer fabric is also of importance, since only with this the desired extreme lightweight construction can be realized to the full extent. At the same time, when in a state of use, the inflatable boat has almost flat floor surfaces inside and out, which offer the occupants comfortable, tip-proof seating or standing options without additional inserts, and on the other hand allows a large number of such inflatable boats to be put together upside down, i.e., with the open interior turned towards the water surface, and next to each other to form a practically seamless walkable pontoon bridge. The two plies of fabric, which are held at a constant distance from each other under the effect of the internal pressure against the connecting threads, give the floor a resistance to local bulging and bending, which makes the insertion of rigid floor boards or gratings superfluous. However, the high dimensional stability of the floor has in turn a supporting effect on the circumferential gunwale tubes, so that the combination of both groups of features results in the high utility value of the novel inflatable boats.

[0006] As a result of the consistently flat course of the floor surface in all parts, the conical thickening of the curved tube pieces continuing from the side tubes that increases towards the front, leads to a bulge-like elevation of the bow tip in relation to the water surface. In comparison to the frequently used bending down of the bow section, this design of the tubes results in a larger contact surface, higher buoyancy and improved floating stability. It also enables simplifications in production technology, while on the other hand the tubes fully fulfil their function as a breakwater.

[0007] The floor is conveniently inflated independently of the gunwale tubes and is provided with its own filling valve for this purpose. In order to protect the filling valves from external mechanical influences, which has very real reasons for utility boats of the type described, it is recommended to arrange them in the bow section and in such a way that the valve assigned to the side tubes is located in a peripheral area of a tube facing the floor in comparison to the valve assigned to the floor. The local combination of both filling valves makes them more easily accessible for the inflation process and results in a desirable reduction in the assembly time.

[0008] To illustrate the invention, an exemplary embodiment is shown schematically in the drawing. In the drawing:

Fig. 1 is a plan view of an inflatable boat in an inflated state ready for use;

Fig. 2 is a sectional view along line II-II and

Fig. 3 is a sectional view along line III-III in Fig. 1.

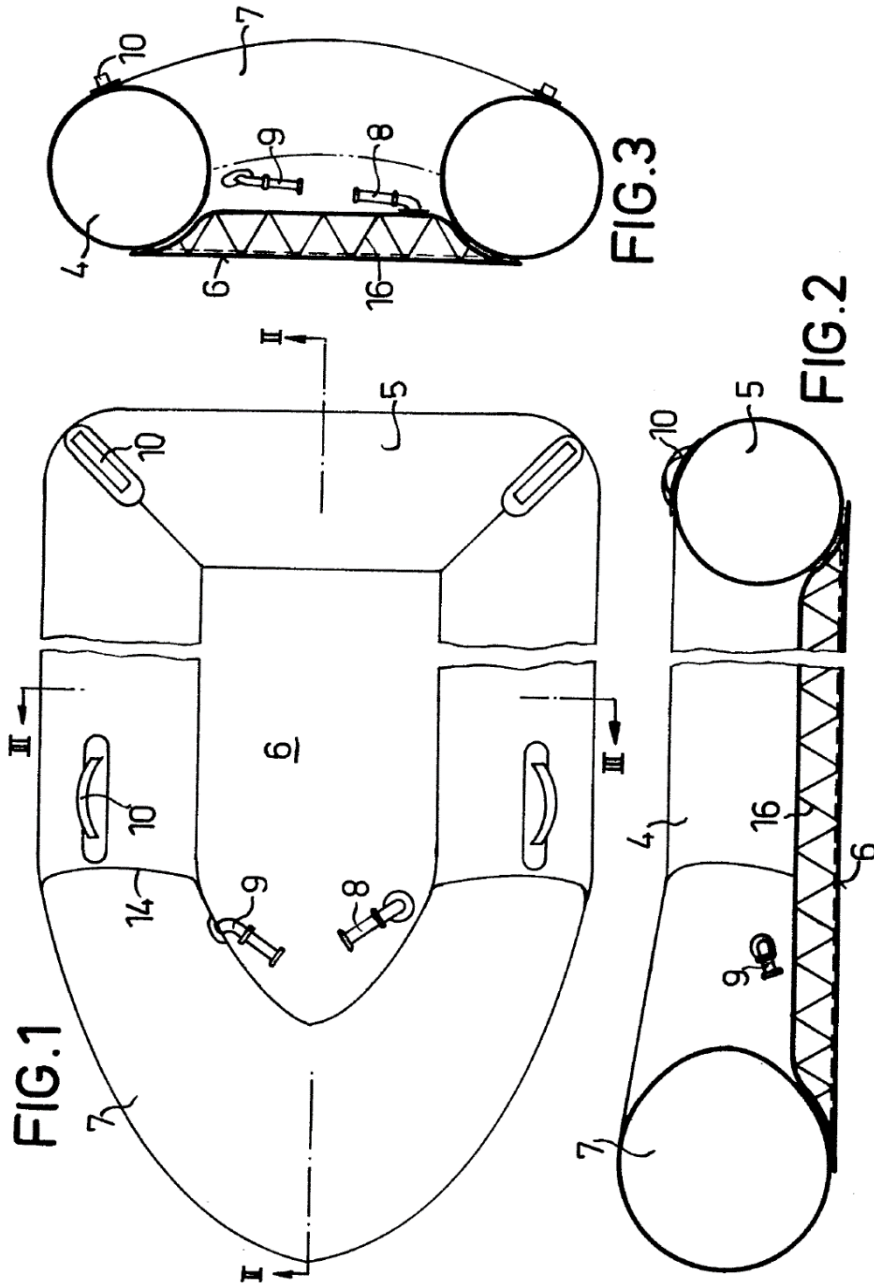
[0009] The inflatable boat depicted is constructed from two straight extending side tubes 4, a transverse tube 5 connecting them and closing them off towards the rear, forming the stern, and a continuous floor 6. The side tubes 4 continue towards the front via curved pieces 7 into the bow section, where they converge in a truncated bow tip. The diameter of the cylindrical side tubes 4 as well as the transverse tube 5 is selected so that it corresponds to no more than about 1/3 of the total width of the boat - measured across the outer walls of the tubes - while the length of the side tubes between the stern and the connecting seam 14 to the curved pieces 7 is about four times their diameter. The curved pieces 7 widen on one side upwards to up to 1.1/2 times the original side tube diameter in the area of the bow tip. This creates a comparatively spacious, highly resilient inflatable boat with a bulbous bow and a basic shape that can be described as a compromise between a teardrop and a pontoon shape.

[0010] The floor 6 is made of a so-called spacer fabric with connecting threads 16 woven between two outer fabric plies and is glued to the gunwale tubes 4, 5, 7 over its entire circumference. A filling valve with a tube connector 8 is provided in the area of one of the curved pieces 7 for inflating the floor. A similar filling valve with a tube connector 9 is attached in the lower peripheral section of the opposite curved piece and in comparison to the valve connector 8 provided for inflating the gunwale tubes.

[0012] The inflatable boat can be provided with carrying straps 10 in the bow and stern areas and with other equipment parts that are not shown in more detail for the sake of clarity, such as rowlocks, motor mounts, mooring eyes, and the like.

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