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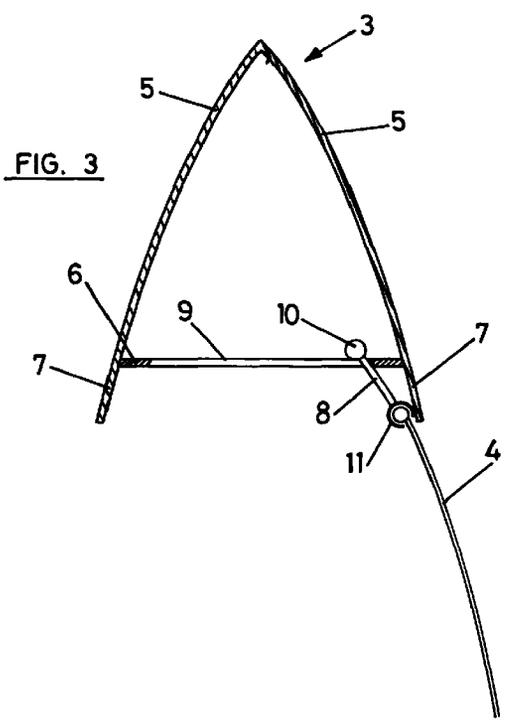
(54) Mast for sailing boats

(57) Mast (3) for sailing boats which presents an isosceles triangular shaped cross section, the equal sides (5) extending further than the third side (6), originating respective wings (7), the third side being provided with means (8,9,10) for attachment of the sail.

FIG. 3



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Description

[0001] The present invention refers to a mast for sailing boats, applicable both to recreation and to competition crafts, and to sailing merchant ships of any tonnage whatsoever, improving the performance of the mainsail.

[0002] Traditional wishbone and bipolar masts cannot obtain from the wind all the energy required in relation to the surface of the mainsail, since the same is placed behind and in the middle of the mast.

[0003] The air issues from the sail from just behind the spar or mast, producing fatal turbulence for the advance of the sailing boats.

[0004] For a total use of the surface of the mainsail, the wind must be adhered to the same along all its trajectory and in these masts, this does not totally occur.

[0005] The object of the invention is to prevent the described problems by means of a mast which presents side surfaces which create a minimum resistance against the wind when it is a headwind, whilst on the contrary, when it is a tailwind, the mast offers an opposed surface to the action of the wind, which adhers to the surface of the mainsail.

[0006] With all the above, a greater performance is obtained with headwind and an additional push of the craft with tailwind.

[0007] In accordance with the invention, the profile toned by the mast is of triangular section, with at least two of its walls being equal, and which extend transversally, as from the third wall into sections of equal length which delimit divergent wings, as from said third wall, The third wall, Which remains partially retracted as regards the other two, is provided with moveable means of fastenings for the sail, which permit the horizontal displacement of the sail along the width of said third wall.

[0008] In the described configuration, the tubular profile has an isosceles triangular profile, the two equal walls preferably having slightly convex curved cross section.

[0009] The means of fastenings for the sail may consist of locks or connections which run between the third wall of the tubular mast and the sail, said means including at least one articulation joint, parallel to the tubular profile.

[0010] The fastening means may consist of a rod which is connected at one end to the third wall of the tubular profile which forms the mast, whilst at the opposed end the sail is connected by means of a shaft articulation joint to the tubular profile.

[0011] The third wall of the profile of the mast can be provided with a transversal groove through which the rod may pass through and move, and which remains retained by means of a internal widening or stop of said rod.

[0012] In like manner to the mast, the boom consists of a tubular profile in which the wall directed towards the sail, shall be of flat configuration. Said wall is provided with transversal grooves or runners to which it is connected and along the length of which, the sail locks can move.

[0013] With the described configuration, due to the shape of the mast and to the possibility of movement of the sail, port-starboard, left-right, a coupling is achieved between both, which permits the formation of an aerodynamic assembly which allows the air, when it is a headwind, to circulate through the extrados of the sail without encountering any obstacle and to continue being adhered to the same along all its trajectory, thus achieving under said circumstances, the greatest effect and production of the sail.

[0014] In like manner, when the wind is a tailwind, the mast of the invention permits the obtention of a greater service, since the third wall of the tubular profile of the mast is transformed into an extension of the surface of the mainsail.

[0015] The specified characteristics and advantages can be better understood with the following description, made with reference to the enclosed drawings, in which a non limitative embodiment is shown.

[0016] In the drawings:

Figures 1 and 2 are respectively, a side and plan view of a craft, provided with a mast constituted in accordance with the invention.

Figure 3 is a cross section of the mast of the craft of figures 1 and 2, at larger scale, showing a connection system of the sail to the mast.

Figure 4 is a like section to figure 1, showing a variation of embodiment of the connection systems of the sail to the mast.

Figure 5 shows diverse types of locks or connectors of the sail to the mast.

Figure 6 shows, in cross section, taken along the line VI-VI of figure 1, the relative position of the sail and the mast with a headwind.

Figure 6 bis, shows a like view to that of figure 6, though with a traditional mast.

Figure 7 is a cross section of the boom, taken along the line VII-VII of figure 6.

Figure 8 is a like view to figure 6, showing the relative position of the sail and the mast, with a tailwind.

Figures 1 and 2 show a sailing boat 1, which includes a mainsail 2 assembled on a mast 3 and attached at the bottom part to the boom 4.

[0017] The mast 3 is of tubular section and adopts, as can be better observed from figures 3 and 4, an isosceles triangular shape, the equal walls 5 of which, are of

slightly convex curved cross section and may extend from the third wall, referenced with number 6, with portions of equal length which determine divergent wings 7.

[0018] The sail 2 is connected to the third wall 6 of the mast 3 by means of moveable fastenings which permits the left-to-right displacement of the attachment points of the sail 2 to the mast, along the width of said wall 6.

[0019] The moveable fastening may be constituted by a rod 8 which, such as is shown in figure 3, can be inserted through a transversal groove 9 of the third wall 6, the rod being finished off at the internal end into a head 10 of greater diameter than the width of the groove 9, so as not to permit its exit, but permitting the displacement of rod 8 along the length of groove 9. On the opposite end, rod 8 is attached to the sail 2 by means of an articulation joint 11.

[0020] Figure 4 shows an embodiment variation in which attached on the exterior of the third wall 6 of the mast 3 are transversal plates 12, on which grooves 9' are performed, to which the rod 8 is connected in like manner to that described with reference to figure 3.

[0021] Figure 5 shows embodiment variations of the fastening which connects the sail 2 to the mast 3.

[0022] These fastenings may be constituted by a part 13a, 13b, 13c which is attached to the third wall 6 of the mast, by means of welding or threading. To this part a journalled arm 15a-15b-15c is connected in articulation, which may adopt any configuration and is finished off into a strip 16 or sleeve 17 for the attachment of the sail.

[0023] Figures 3 through 5 only show possibilities of connection between the sail and the mast, which meet the characteristics of permitting the movement of the connection points of the sail to the mast in horizontal direction, widthwise to the third wall 6 of the tubular profile which forms the mast.

[0024] As is shown in figures 6 and 7, the boom 4 shall also be preferably constituted by a tubular profile which shall at least present an upper flat wall 18, directed towards the sail 2. Said wall 18 shall be connected to the sail so that the connection points can be transversally displaced as regards the boom 4. For this, wall 18 may be provided with transversal grooves 19, of decreasing length as they move away from the mast 3, to which the sail 2 shall connected by means of rods 20 of like characteristics to rod 8, figures 3 and 4, which connect the sail to the mast.

[0025] Figure 6 shows the position adopted by the sail, as regards the mast 3, with a headwind. The connections of the sail 2 to the mast 3 are transversally displaced as regards said mast, the external surface of the sail remaining as an extensionn of one of the walls 5 of the mast 3. Thus a continuous aerodynamicc plane is obtained, permitting the air to circulate through the extrados of the sail without encountering any obstacle.

[0026] Figure 6 bis, shows the turbulences produced in a traditional mast.

[0027] Said turbulence are eliminated with a mast with wings, figure 6, as can be observed.

[0028] Figure 8 shows the relative position of sail 2, in relation to mast 3, with a tailwind, In this case, the wind shall influence perpendicularly the third wall 6 of the mast 3, acting on the same with improved effect, due to the existence of the wings 7 which limit wall 6. In this manner, the surface of wall 6 constitutes an increase of the surface of sail 2, with which an improved use of the action of the wind is achieved.

Claims

1. Mast with wings for sailing boats, constituted by a tubular profile, characterized in that the profile is of triangular section, with at least two of its walls (5) equal, which extend transversally, as from the third wall (6), into sections of equal length which determine divergent wings (7); the third wall (6) being provided with moveable fastening means for the sail (2), which permit its horizontal displacement along the width of said wall (6).

2. Mast with wings, according to claim 1, characterized in that the two equal walls (5) of the profile are of slightly convex curved transversal section.

3. Mast with wings, according to claim 1, characterized in that said fastening means consist of locks or connectors which run between said third wall (6) of the tubular profile and the sail (4) and include at least one articulation joint parallel to the tubular profile.

4. Mast with wings, according to claim 1, characterized in that said fastening means consist of a rod (8) which is connected at one end to said third wall (6) of the tubular profile, capable of movement along the width of said wall (6), whilst at the opposite end the sail (2) is connected by means of a shaft articulation joint parallel to the tubular profile.

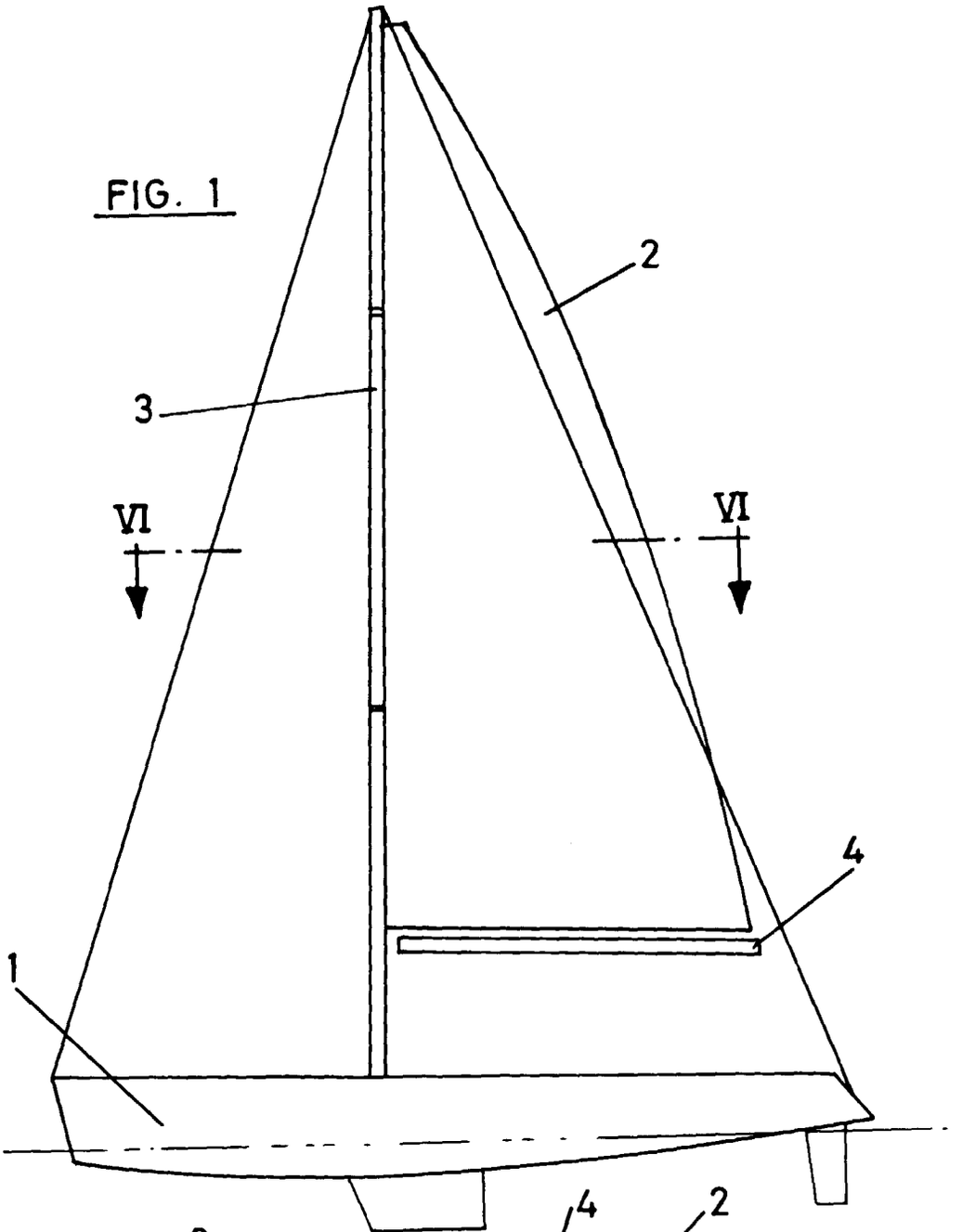
5. Mast with wings, according to claim 4, characterized in that the third wall (6) is provided with a transversal groove (9) through which the rod (8) can pass through and move, and which remains retained by means of an internal widening or stop (10) of said rod (8).

6. Winged mast, according to claim 4, characterized in that the third wall (6) is externally attached with a plate (12) with longitudinal groove (9') which defines a transversal runner to which it is connected and along the length of which, the rod (8) can move.

7. Mast with wings, according to claim 1, characterized in that the boom (4) is constituted by a tubular profile which presents at least one flat wall (18) directed towards the sail (2), the wall (18) of which,

is provided with transversal grooves or runners (19) to which they are connected and along which the locks (20) of the sail can move.

FIG. 1



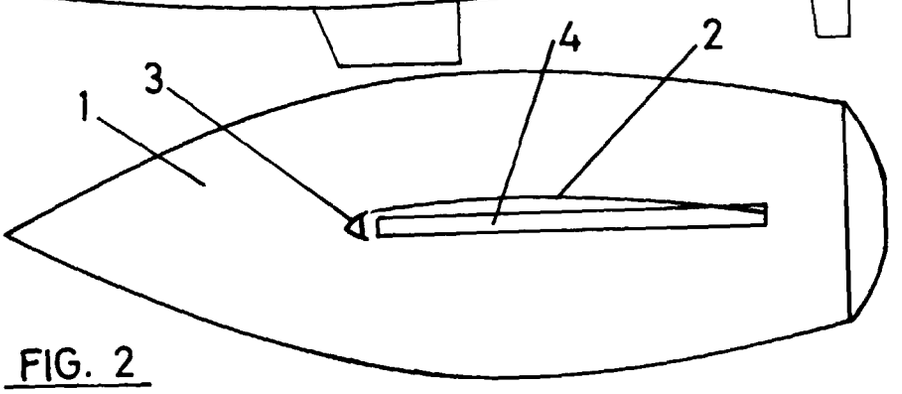


FIG. 2

FIG. 3

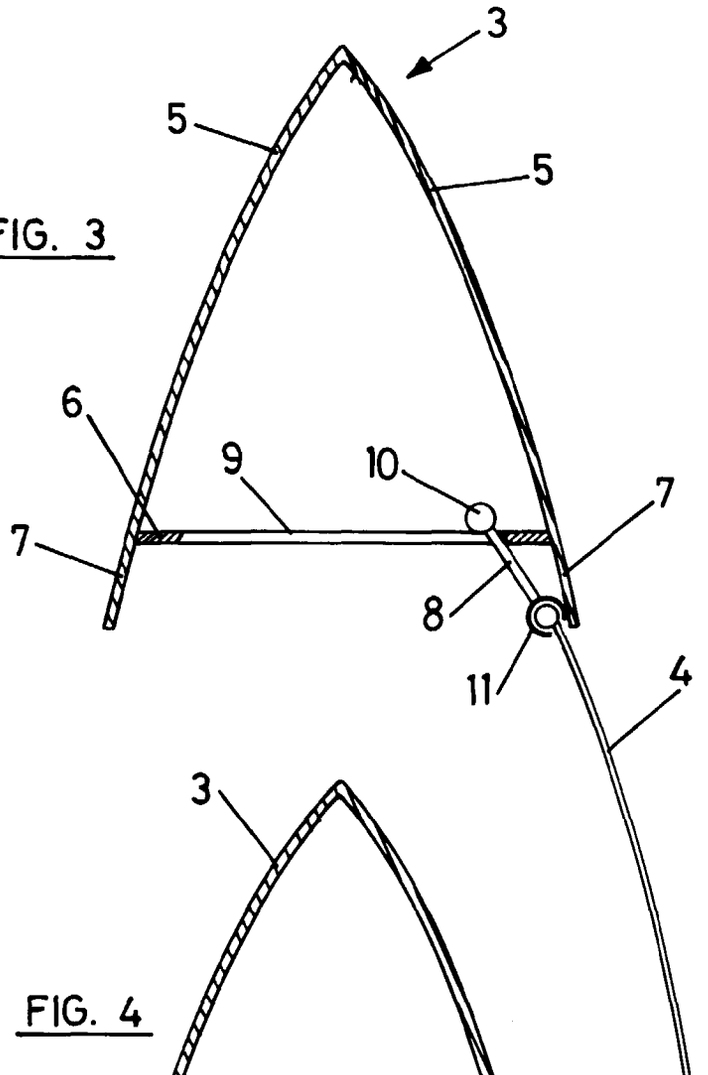
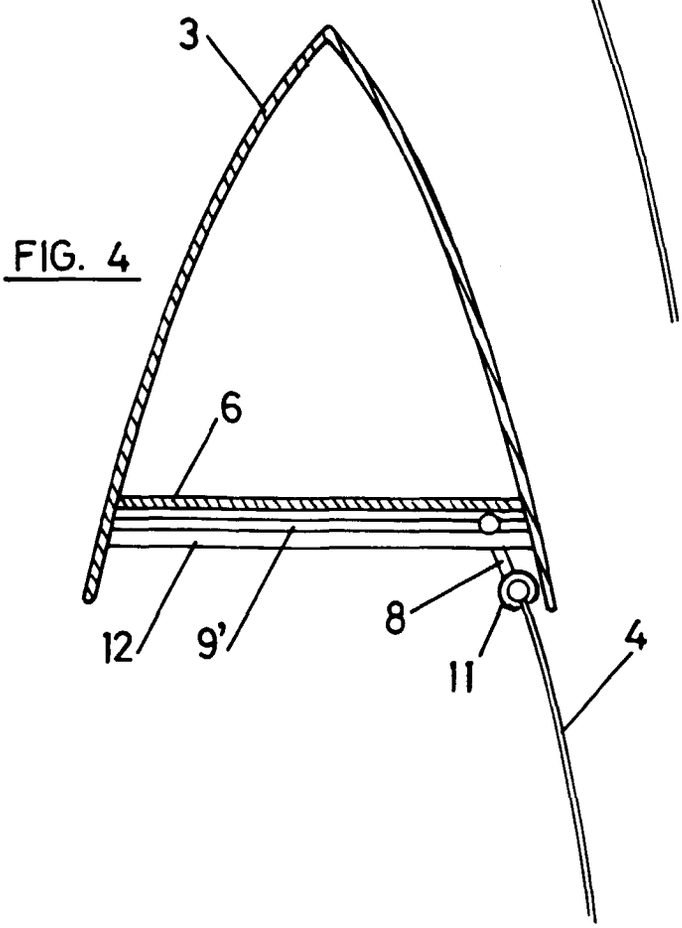


FIG. 4



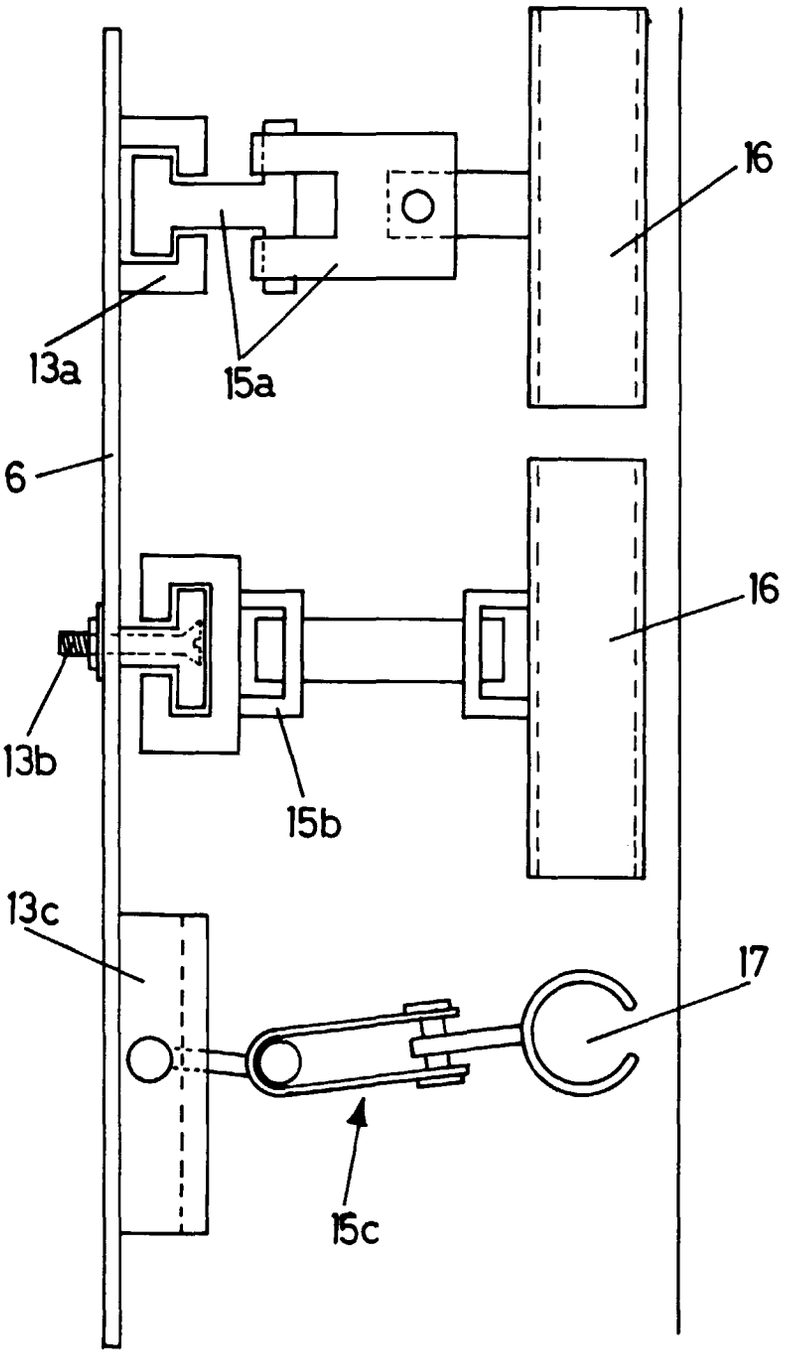


FIG. 5

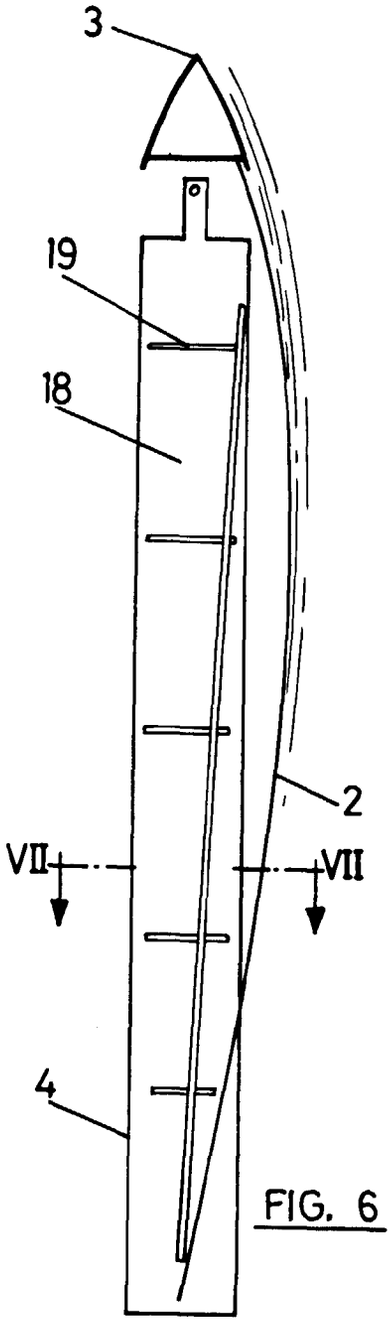


FIG. 6

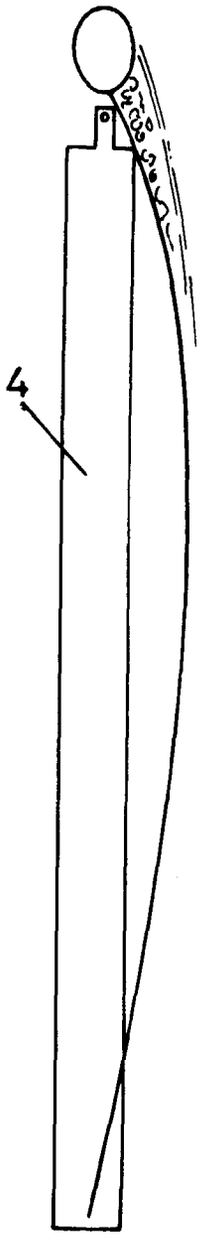


FIG. 6bis

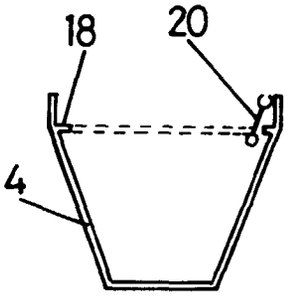


FIG. 7

FIG. 8