

(19)



(11)

EP 2 636 590 A1

(12)

EUROPEAN PATENT APPLICATION
published in accordance with Art. 153(4) EPC

(43) Date of publication:

11.09.2013 Bulletin 2013/37

(51) Int Cl.:

B63H 9/06 (2006.01)

(21) Application number: **11761089.9**

(86) International application number:

PCT/ES2011/070405

(22) Date of filing: **07.06.2011**

(87) International publication number:

WO 2012/059610 (10.05.2012 Gazette 2012/19)

(84) Designated Contracting States:

**AL AT BE BG CH CY CZ DE DK EE ES FI FR GB
GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO
PL PT RO RS SE SI SK SM TR**

(72) Inventor: **Cunto Lerín, José Javier**
50004 Zaragoza (ES)

(74) Representative: **Pons Ariño, Angel**
Glorieta Ruben Dario 4
28010 Madrid (ES)

(30) Priority: **04.11.2010 ES 201031623 U**

(71) Applicant: **Cunto Lerín, José Javier**
50004 Zaragoza (ES)

(54) **SAIL FOR BOATS**

(57) The sail according to the invention is especially designed to ensure optimum aerodynamic performance of the same, characterized in that it is shaped like an aeroplane "wing", including means for stowing/deploying the same. To do so, the sail can be deployed horizontally, using two pairs of vertical winders and the corresponding

straps to guide the sail through the supporting structure thereof, or it can be deployed vertically, via a platform having a "wing"-shaped cross section that can be moved vertically along the axis of the mast, and to which the sail itself is connected, which can be raised using worm gears or hydraulic means.

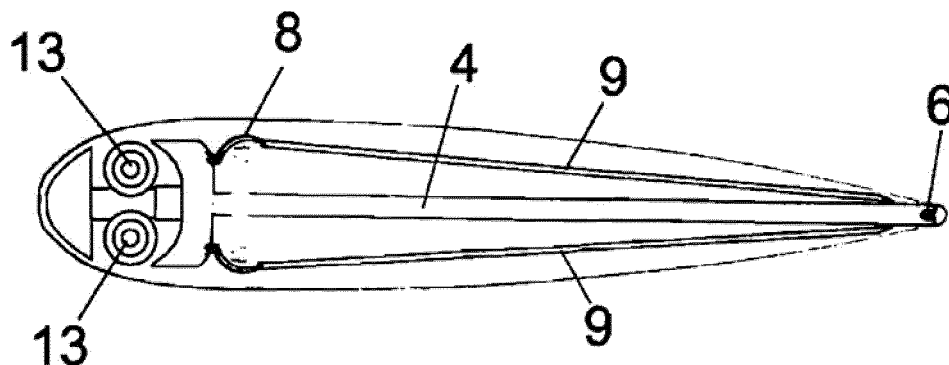


FIG. 2

EP 2 636 590 A1

Description

OBJECT OF THE INVENTION

[0001] The present invention relates to a sail for boats which presents the peculiarity of having the shape corresponding to an airplane wing, being attached to two reels located inside the mast and displacing the fabric laterally. The object of the invention is to achieve better aerodynamics of the sail, in order to optimize the stress of the wind on it.

BACKGROUND OF THE INVENTION

[0002] There are numerous types of sails for boats, regarding the shape and configuration of said sails, but in no case a sail that presents the shape or configuration of an airplane wing is known, as this configuration requires some means to allow extensibility and pliability of the sail, and so far there are no records either at the Patent registration, Utility Models or marketing level, of sails with a silhouette similar to that of an airplane wing.

DESCRIPTION OF THE INVENTION

[0003] The sail being recommended presents a series of peculiarities on the basis of which, it ensures that the stress that the wind provokes on the sail is maximized for optimum effectiveness of the sail.

[0004] More specifically, the sail of the invention is formed by a mast with an inner axis to be able to move said mast from right to left, a frame with frame crossbeams, also called frame timber, said frame attached to the mast, at the top and bottom of the frame two protectors are set which play the part of the edge of the wing and have two guides inside for the movement of the fabric.

[0005] On each side of the mast there are two reels for rolling fabric up, the fabric extending from the first reel, passing behind the frame, and being taken in by the other reel, to later configure the shape of a "wing" provided with curvature to one side or the other depending on the orientation to the wind of the mast.

[0006] To move the fabric there are ribbons sewn to the fabric and placed at the level of each frame crossbeam of the mast. On the outside of the frame and at the level of the frame crossbeam, there is a recess in the frame to accommodate nylon bushings. These bushings have recesses that are also a guide to the ribbons, preventing said ribbons from coming out, also facilitating the outwards movement of the frame, the ribbons and the fabric. These ribbons are held in the second reel, so that this reel pulls the ribbons to bring the fabric closer (located on the first reel) and shape the two sides of the "wing."

[0007] Within the mast and at the level of each frame crossbeam of the frame, two eccentric tensors, joined from top to bottom by a curved piece of aluminium or other strong material, to which two battens made of nylon,

carbon or other strong resilient material are attached, which serve to tighten the fabric and shape its form of "wing", providing curvature to one side or the other, depending on the desired orientation to the wind.

[0008] Optionally, and according to a second alternative embodiment of the invention, the sail may be formed by a platform which is movable upward and downward along the mast, so that the fabric is attached to this platform and moves along guides set in the mast, so that the corresponding support frame for the sail has an edge on its upper part that is fixed and gathers the platform that raises the sail fabric.

[0009] On the other hand, in the corresponding boom (also called base) where the corresponding fabric reel is mounted and where the movable platform is lifted along the mast), through a movement that is performed by three augers, so that in that lifting the reel takes the fabric along, which, once placed into position, tightens up and forms the sail.

[0010] The frame of the sail comprises battens made of nylon, carbon or other strong resilient material, which are attached to eccentric tensioners devised to stretch the fabric, being devised in the mast guides for the movement of the fabric, when pulled by the platform.

[0011] The fabric can be replaced by slats of rigid fibre, like in a blind, in which case no platform or auger is required, although it has been said that the upward movement of the platform to which the fabric of the sail is attached is performed by means of augers, it may also be performed by means of hydraulic axis with the same function, so in this case to raise the sail it would be necessary to use engines, and to move the slats, it would be necessary to use guides on the mast and the frame, having slats on both sides of the frame, by rolling both sets of slats that constitute the sail in the corresponding rolling axis provided on the boom.

DESCRIPTION OF THE DRAWINGS

[0012] To complement the description that is being made below and in order to help better understand the characteristics of the invention, according to a preferred practical embodiment thereof, a set of drawings is attached as an integral part of said description, wherein the following is shown as way of illustration but not limited to:

Figure 1 .- Shows the shape of the sail once the fabric is placed and stretched. The curved side can be achieved in either of the two sides, depending on the orientation to the wind of the mast. The eccentric tensioners with the battens are the ones which form the curvature of the fabric.

Figure 2 .- Shows a plan view of the sail of the invention, in which the rolling of the fabric is made using two reels on either side of the mast.

Figure 3 .- Shows, a side view of the frame with the corresponding frame crossbeams, in which ribbons

attached to the fabric are shown within the first reel and the second reel which is the one that pulls the ribbons to take in the fabric and a side view of the embodiment shown in the figure above.

Figure 4 .- Shows a plan view corresponding to a second example of a preferred embodiment of the invention in which, the axis of the mast, the guides for the upward movement of the fabric, as well as its tensioners and the two battens of nylon attached to them based on which the sail is formed, are shown. Figure 5 .- Finally shows a view of the frame of the sail, where in addition to the axis of the mast at the bottom, the boom where the reel of the fabric is and the platform are shown and on the upper part, an edge where the platform is taken in and raises the fabric. The pole is not fixed, it has an inner rotating axis on which it turns from side to side to steer the wing.

PREFERRED EMBODIMENT OF THE INVENTION

[0013] As it is shown in the figures referred to above, the sail of the invention is mainly characterized in that it presents a shape as that of an airplane wing (1), as shown in Figure 1, with a curved front end (2) and a smooth rear end (3).

[0014] In the alternative embodiment shown in Figures 2 and 3, the corresponding fabric for the sail is spread from a first reel (13) that contains the fabric and a second reel (13), located within the mast, so that to facilitate the spreading of said sail, the ribbons that pull the fabric have a system of guides that is attached to the crossbeams (14) of the frame (10) of the sail, so that one of the reels (13) takes in and moves the fabric from one side to the other, passing behind the frame (10), on the upper part inside the edge of the sail, and at the bottom part inside the boom.

[0015] The other reel has the function of spreading the sail by pulling the ribbons, taking in part of the fabric to begin stretching.

[0016] In this first alternative embodiment shown in Figures 2 and 3, the sail would include the corresponding tensioners (8) and the battens (9) to give shape to the "wing" sail.

[0017] According to a second example of a practical embodiment of the invention, the one shown in Figures 4 and 5, as part of the sail, a platform (4) has been devised, which is moved over the corresponding axis of the mast (5), upwards, by means of three augers (6), having also guides (7) for moving the fabric on the rising of the platform (4), as shown in Figure 2.

[0018] A pair of lateral and eccentric tensioners (8) to stretch the sail fabric are shown, being attached to said tensioners (8) two battens made of nylon, carbon or other strong, resilient material (9) which serve to form the wing or sail giving it the curvature corresponding to one side or the other depending on the desired orientation to the wind.

[0019] Figure 5 shows finally the frame (10) of the sail, in which the lower part corresponding to the boom includes the reel (11) for the fabric and the platform moving upwards through the axis (5) of the mast, with the particularity that the frame (10) has its upper part (12) fixed, and forming an edge for taking in the platform (4) fig. 2 that raises the fabric.

10 Claims

1. Sail for boats, **characterized in that** it is formed by a fabric and provided with means for taking in /spreading the sail, said sail provided with a structure that when spreading gives said sail a shape of an airplane "wing" .
2. Sail for boats, according to claim 1, **characterized in that** on the mast, two reels for the lateral spreading of the fabric are devised, in one of which the fabric is stored, while the other pulls said fabric by means of ribbons arranged in the fabric and secured to the second reel, being devised the inclusion of guides for the ribbons that carry the fabric and are attached to the frame on the upper part inside the edge of the sail and on the bottom part inside of the boom.
3. Sail for boats, according to claim 1, **characterized in that** it is formed from a platform mounted in a movable way on the corresponding axis of the mast of the boat, to which platform the fabric is attached for its movement upwards along with said platform, adopting the configuration of an airplane wing, being devised that the movement of said platform is done by means of augers or hydraulic axis, and has guides for the movement of the fabric.
4. Sail for boats, according to claim 1, **characterized in that** the corresponding frame in which the sail is set, being devised a fixed upper part determining an edge to take in the platform during its raising, and a lower part in which the corresponding reel of the fabric and the platform itself are set in their resting position.
5. Sail for boats, according to claim 1, **characterized in that** the fabric is attached to eccentric tensors to which respective battens of nylon, carbon or other similar strong, resilient material are attached for the formation of the sail.

Amended claims under Art. 19.1 PCT

1. Boat sail structure, comprising:
 - a sail;
 - taking in / spreading means for taking in /

spreading the sail;
 - a mast (5) for supporting the sail; and
 - eccentric tensors (8), attached to respective battens of strong resilient material, for forming the sail according to the shape of an airplane "wing";

characterized in that it additionally comprises:

- a frame (10) having frame crossbeams (14),
 said frame (10) being fixed to the mast (5);

wherein the taking in / spreading means comprises two reels (13) located over the mast (5), one of the reels (13) being configured so as to roll the sail up, the other reel (13) being configured so as to spread the sail;
 the structure further comprising ribbons located at the level of each frame crossbeam (14) for being pulled by the other reel (13), so as to spread the sail;
 the ribbons being movable along guides (6) located on the frame (10).

2. Boat sail structure, comprising:

- a sail;
 - taking in / spreading means for taking in / spreading the sail;
 - a mast (5) for supporting the sail;
 - eccentric tensors (8), attached to respective battens of strong resilient material, for forming the sail according to the shape of an airplane "wing";

characterized in that it additionally comprises:

- a frame (10) having frame crossbeams (14),
 said frame (10) being fixed to the mast (5);

wherein the taking in / spreading means comprises a platform (4) movable along the mast (5), the sail being attached to the platform (4) for being rolled up and down along guides (6), wherein the frame (10) comprises:

- an edge, located on the upper part (12) of the frame (10), for taking in the platform (4) when said platform (4) in an upper position; and
 - a reel (11) located on the lower part of the frame (10), for taking in and spreading the sail.

3. Boat sail structure according to claim 2, additionally comprising augers for moving the platform (4).

4. Boat sail structure according to claim 2, additionally comprising hydraulic axis for moving the platform (4).

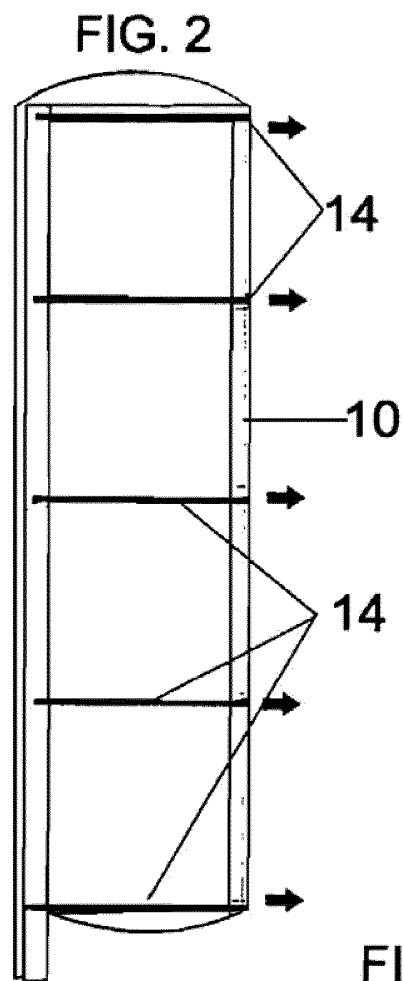
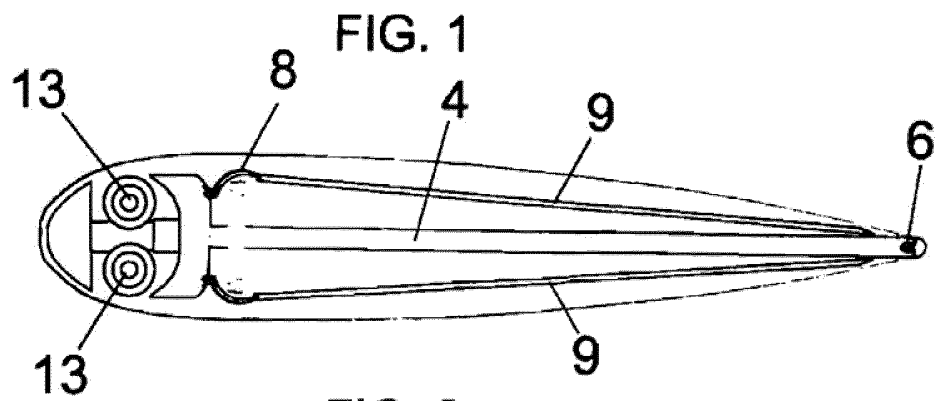
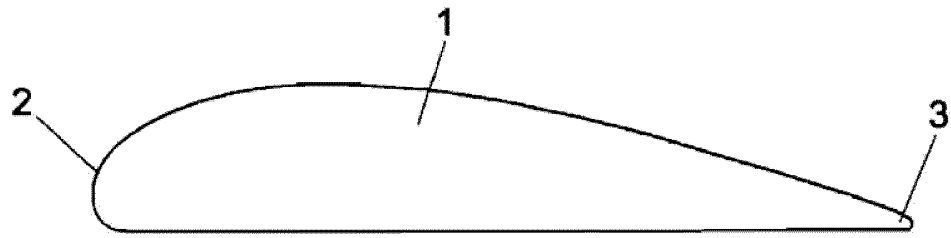
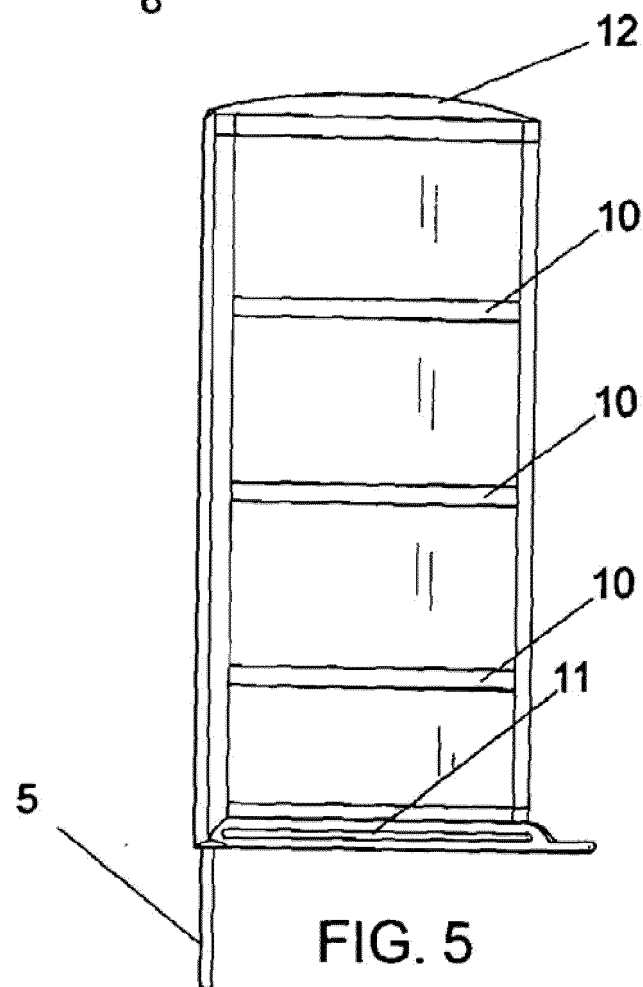
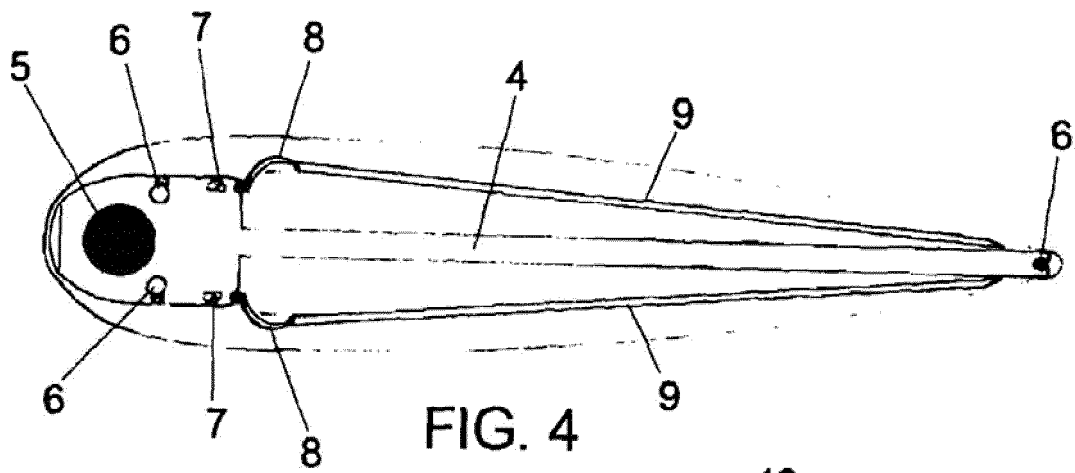


FIG. 3



INFORME DE BÚSQUEDA INTERNACIONAL

Solicitud internacional N°

PCT/ES2011/070405

A. CLASIFICACIÓN DEL OBJETO DE LA SOLICITUD

INV. B63H9/06

De acuerdo con la Clasificación Internacional de Patentes (CIP) o según la clasificación nacional y CIP.

B. SECTORES COMPRENDIDOS POR LA BÚSQUEDA

Documentación mínima buscada (sistema de clasificación seguido de los símbolos de clasificación)

B63H

Otra documentación consultada, además de la documentación mínima, en la medida en que tales documentos formen parte de los sectores comprendidos por la búsqueda

Bases de datos electrónicas consultadas durante la búsqueda internacional (nombre de la base de datos y, si es posible, términos de búsqueda utilizados) EPO-Internal

C. DOCUMENTOS CONSIDERADOS RELEVANTES

Categoría*	Documentos citados, con indicación, si procede, de las partes relevantes	Relevante para las reivindicaciones N°
X	US 5 271 349 A (MAGRINI GIORGIO [IT]) 21 Diciembre 1993 (1993-12-21) Columna 2, línea 53 - columna 4, línea 49; Figuras 1-4	1
Y	-----	3
X	US 5 799 601 A (PEAY MICHAEL B [US]) 1 Septiembre 1998 (1998-09-01) Columna 9, línea 29 - columna 10, línea 54; Figuras 1-3	1,5
Y	-----	3
A	JP 57 178994 A (NIPPON HAKYO KIKI KAIHATSU) 4 Noviembre 1982 (1982-11-04) Resumen; figuras 1-15	1

☐ En la continuación del Recuadro C se relacionan otros documentos ☒ Los documentos de familias de patentes se indican en el Anexo

* Categorías especiales de documentos citados:	"T"	documento ulterior publicado con posterioridad a la fecha de presentación internacional o de prioridad que no pertenece al estado de la técnica pertinente pero que se cita por permitir la comprensión del principio o teoría que constituye la base de la invención.
"A" documento que define el estado general de la técnica no considerado como particularmente relevante.	"X"	documento particularmente relevante; la invención reivindicada no puede considerarse nueva o que implique una actividad inventiva por referencia al documento aisladamente considerado.
"E" solicitud de patente o patente anterior pero publicada en la fecha de presentación internacional o en fecha posterior.	"Y"	documento particularmente relevante; la invención reivindicada no puede considerarse que implique una actividad inventiva cuando el documento se asocia a otro u otros documentos de la misma naturaleza, cuya combinación resulta evidente para un experto en la materia.
"L" documento que puede plantear dudas sobre una reivindicación de prioridad o que se cita para determinar la fecha de publicación de otra cita o por una razón especial (como la indicada).	"&"	documento que forma parte de la misma familia de patentes.
"O" documento que se refiere a una divulgación oral, a una utilización, a una exposición o a cualquier otro medio.		
"P" documento publicado antes de la fecha de presentación internacional pero con posterioridad a la fecha de prioridad reivindicada.		

Fecha en que se ha concluido efectivamente la búsqueda internacional 13 December 2011	Fecha de expedición del informe de búsqueda internacional 22/12/2011
Nombre y dirección postal de la Administración encargada de la búsqueda internacional European Patent Office, P.O. 5518 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Funcionario autorizado Martínez, Felipe
N° de fax	N° de teléfono

Formulario PCT/ISA/210 (segunda hoja) (Julio 2008)

INFORME DE BÚSQUEDA INTERNACIONAL

Información relativa a miembros de familias de patentes

Solicitud internacional N°

PCT/ES2011/070405

US 5271349	A	21-12-1993	AU	6516890 A	18-04-1991
			DE	69004073 D1	25-11-1993
			DE	69004073 T2	03-03-1994
			EP	0444187 A1	04-09-1991
			IT	1231705 B	20-12-1991
			NZ	235344 A	25-02-1993
			US	5271349 A	21-12-1993
			WO	9104191 A2	04-04-1991

US 5799601	A	01-09-1998	NINGUNO		

JP 57178994	A	04-11-1982	JP	1236680 C	31-10-1984
			JP	57178994 A	04-11-1982
			JP	59011478 B	15-03-1984
