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(54) **Title**: FURLING DEVICE FOR FURLING SAILS

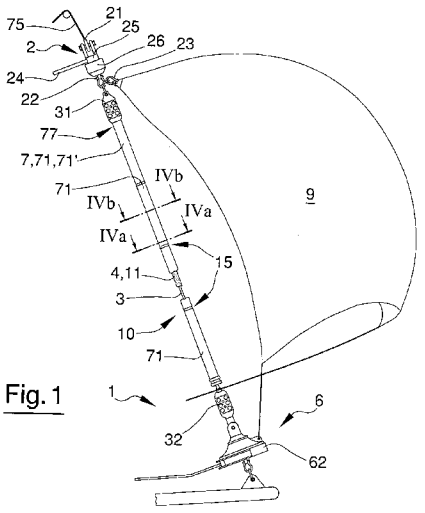


Fig. 1

(57) **Abstract**: A furling device (1) for furling sails (9) of a boat, comprising a furler (6) that can be coupled to said boat; a swivel (2) carried stably, in use, in a head position of a mast of the boat; a furling group (10) comprising a stay (11) housed inside a respective tubular sheath (7) and arranged, in use, between the swivel (2) and the furler (6) to allow furling/unfurling operations of each sail (9); the sheath presenting a modular structure comprising a plurality of tubular segments (71) coupled together.

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FURLING DEVICE FOR FURLING SAILS

DESCRIPTION

The present invention relates to a furling device. In particular, the present invention relates to a furling device for furling the sails of a boat.

BACKGROUND TO THE INVENTION

In the field of medium-large boats the use of furling devices is well known continuously to vary the surface of the headsails exposed to wind in downwind sailing. These devices usually comprise a furler, stably coupled with the boat deck, and a stay, tensioned between a rotating terminal of the furler and a swivel carried by the halyard in a head position of the respective mast. While the headsails are being rolled, this stay is taken into rotation by the furler and acts as a drum, around which the sail is rolled.

In this regard, it should be noted that such furling devices have been increasingly used over the years, as they make hoisting/hauling operations simpler; nowadays they are used to roll/unroll sails whether attached to the stay or not.

An example of a furling device for flying asymmetric headsails, such as spinnakers or gennakers, is the furler called RLG-RollGen of the Italian firm A.R.TE. Srl; it is currently produced according to the teachings of the Italian utility model No. 252764 (hereafter IT'764) of the same Applicant, whose text shall be considered embodied in the present description for the sake of conciseness. With particular reference to figure A, the same as figure 5 of IT'764, a furling device for furling sails according to this utility model is provided with a stay *"comprising an outer profile 4 wounded around an inner profile 3, designed to transmit the necessary torque for furling a sail 9"*.

This stay *"further comprises a profile sheath 7 outside the profiles 3 and 4. The inner profile 3 is constituted, for instance, by a sheet or line and the outer profile 4 is constituted, for instance, by a flexible web wound around the sheet and integral with it."* (IT'764, from page 6, row 22 to page 7, row 6). Furthermore, IT'764 specifies that *"The profile sheath 7 is joined with the inner profile 3, integral with the outer profile 4, only at the head point 77."* In this way, when furling the sail 9 it is sufficient to rotate the stay by means of the furler 6 to bring the sheath 7 into rotation, thus making the sail be rolled around this sheath 7. In this regard, *"the furling operation is progressively completed from top to bottom; firstly, the head of the sail is wound, then the central part until the rotating tack 51 of the sail base is drawn"* (IT'764 page 8, rows 18-21). However, it should be specified that, when a sail is partially wound around the sheath during furling/unfurling operations and is exposed to the wind, it exerts a radial compression on the sheath. This radial compression is stronger on the lower part of the sheath, around which the sail portion presenting greater surface exposed to the wind is wound, and progressively decreases going up along the axis of the stay. It should be specified also that the sheath is produced in a deformable material, for instance foam rubber; with strong wind, the radial compression exerted by a partially wound sail may therefore deform this sheath and reduce the inner clearance thereof, lastly clamping the profiles forming the stay. In these operating conditions some sheath portions, for instance the lower portion, are therefore temporarily coupled integrally to the outer profile of the stay and may be brought into rotation by it. Consequently, during furling operations the various longitudinal portions of the sheath do not rotate at a

common angular speed; the head portion, rigidly connected with the stay profiles, and the lower portion, made temporarily integral with the stay profiles due to the compression exerted by the sail, tend to rotate with greater angular speed than the intermediate portion. Due to this phenomenon, the sail is not regularly and uniformly furled and shear stresses may be generated between the sail portions that have been rolled at different speed. In this regard it should be noted that sails are usually designed to support membrane stresses with normal action; they are not optimized to resist stretches and shear stresses, that can therefore cause tears that shall be avoided.

It should be furthermore specified that, due to the compression exerted by a partially wound sail, the various longitudinal portions of the sheath rotate at different speeds also during the unfurling operations. Using a furling device produced according to the teachings of the utility model IT'764, the sails could be therefore irregularly unfurled, causing the operating situation illustrated in figure B, wherein, while the sail upper and lower portion are completely unrolled and exposed to the wind, the median portion is still partially wound around the stay, and therefore substantially caught by it.

In particular, it should be noted that the operating situation illustrated in figure B is due to the fact that, as the lower portion of the sail has been completely unrolled, ends the radial compression that made the lower portion of the sheath integral with the stay and that, generating the different angular speeds of the various longitudinal portions of the sheath, caused a torsion deformation of this sheath. When this compression ends, the sheath consequently tends to detach itself radially from the stay and to return, in a substantially elastic manner, in a respective balance position through a sudden rotation of its intermediate and lower portions in the same

direction as the direction of rotation causing the sail unfurling.

In these operating conditions the just unrolled edge of the sail intermediate portion, which may be still near the sheath because of the absence of wind (true or apparent, in case of motion) or of the particularly concave conformation of the sail, is brought into rotation by the sudden acceleration of the sheath and is forced to be furled again in opposite direction to the correct furling direction.

Clearly, this inverse furling of the sail intermediate portion prevents the sail being completely and correctly furled and subjects it to shear stresses that could cause the tear of this sail, thus making it unusable.

Moreover, it should be specified that the above described torsion deformation of the sheath resulting from the furling operations continues over the entire period when the sail is wound around the stay. After a prolonged use and frequent sail furling/unfurling operations, this torsion deformation of the sheath causes foam rubber fatigue and results firstly in cracks on the surface and then in breakage of the same sheath, that shall be therefore replaced. A further example of a furling device for flying asymmetric headsails is described in the patent document EP1902942 of the same Applicant, which is an improvement of the device according to the utility model IT'764 but however presents the problems described above.

Therefore, in view of the above situation, the problem of having available a furling device for free flying asymmetric sails is solved in a dissatisfactory manner and represents an interesting challenge for the Applicant, which has the object of developing a new furling group allowing to limit and possibly to solve the drawbacks of the prior art illustrated above.

In particular, in view of the above description it

would be desirable to have available a furling group wherein most the longitudinal extension of the sheath is always able, in use, to rotate freely around the respective stay to allow respective headsails being furled while preventing stretches or tears thereof.

SUMMARY OF THE PRESENT INVENTION

The present invention relates to a furling device. In particular, the present invention relates to a furling device for furling the sails of a boat.

An object of the present invention is to provide a sheath usable in a furling device designed to furl and alternatively unfurl a sail of a boat, preventing the sail from being subjected to stretches and shear stresses that could damage it or jeopardize the furling or unfurling thereof.

According to the present invention a stay is provided for furling sails of a boat and the main features of this stay will be described in at least one of the following claims.

A further object of the present invention is a furling group comprising a stay and said sheath designed to be used in a furling device able to furl and alternatively unfurl a sail of a boat, preventing this sail from being subjected to stretches and shear stresses.

According to the present invention a furling group is provided for furling sails of a boat and the main features of this group will be described in at least one of the following claims.

A further object of the present invention is to provide a furling device usable to adjust the surface exposed to the wind of the sails, for instance the headsails.

According to the present invention a furling device is provided for furling sails of a boat and the main features of this furling device will be described in at least one of

the following claims.

A further object of the preset invention is to provide a method validly usable to arrange a furling group inside a furling device for furling the headsails of a boat.

According to the present invention a method is also provided to prepare a furling group usable to furl a sail of a boat and the main features of this method will be described in at least one of the following claims.

BRIEF DESCRIPTION OF DRAWINGS

Further characteristics and advantages of the present invention will be more apparent from the description below, set forth with reference to the accompanying drawings, which illustrate some non-limiting examples of embodiment, in which identical or corresponding parts of the furling device for furling sails and of the respective stay are identified by the same reference numbers. In particular:

- figures A and B illustrate an embodiment of a prior art furling device for furling headsails;
- figure 1 is a side elevation view of a first preferred embodiment of a furling device according to the present invention;
- figure 2 illustrates, in enlarged scale, a first detail extracted from figure 1;
- figure 3 is a schematic perspective view of a second detail extracted from figure 1, in enlarged scale and with some parts removed for the sake of clarity;
- figure 4 illustrates, in enlarged scale, two different cross sections, respectively according to the lines IVA and IVB, of the second detail of figure 3;
- figure 5 illustrates a second preferred embodiment of figure 3; and
- figure 6 illustrates a third preferred embodiment of figure 2.

DETAILED DESCRIPTION OF THE PRESENT INVENTION

In figure 1 number 1 indicates, in its entirety, a

furling device for furling the sails of a boat, usable for hoisting and hauling a headsail 9, preferably a sail not attached to the stay, furling or unfurling it around a respective stay 11; the device comprises a flexible and substantially non extendable elongated body that hereafter will be indicated with the same reference number 11 for the sake of simplicity. This elongated body 11 is preferably, although without limitation, produced according to the teachings of the utility model IT'764 of the Applicant; it therefore comprises an inner core 3, presenting high tensile strength, and an outer sock 4 designed to transmit, in use, the necessary torque for furling the sail 9. This outer sock 4 surrounds the inner core 3 and is coupled with it in an integral manner along all the respective length. In particular, the inner core 3 may preferably comprise a sheet or rope, whilst the outer sock 4 may preferably comprise at least one flexible web wound around the inner core 3 and integral with it thanks to adequate thermal treatments.

With particular reference to figure 1 again, the device 1 comprises a furler 6 provided with a basement 62 coupled in an axially fixed manner with the bow of a boat, known and therefore only partially illustrated. This basement 62 presents a first connection terminal 67 carried by the basement 62 in a selectively rotary manner and designed to be coupled to a first clamp terminal 32 rigidly coupled to the lower end portion of the stay 11. This furler 6 may be manual, comprising for instance a continuous furling system 63 provided with a line system 64 controlled from the cockpit, like that of figure 1, or it may be provided with a motorized actuator for the rotary motion, without however varying the general scope of the present invention. Similarly, the basement 62 may be rigidly joined to the deck of the boat or it may be connected with it by means of a second connection terminal

61, without however varying the operation of the furling device 1 and therefore the general scope of the present invention.

With particular reference to figures 1 and 2, the basement 62 of the furler 6 also carries in a freely rotating manner a third connection terminal 66, preferably, although without limitation, of the shackle type, for the tack pennant 51 of the sail 9. This third connection terminal 66 can freely rotate independently of the first connecting terminal 67 so as to follow the tractions exerted by the tack pennant 51 and therefore, in use, it is not suitable to exert torsion on the sail 9.

With particular reference to figure 1 again, the furling device 1 further comprises the stay 11 which, in use, is maintained tensioned between the first connection terminal 67 of the furler 6 and a swivel 2 carried by the halyard 75 in a head position of the mast with which the sail 9 is associated. In particular, the swivel 2 comprises an upper first portion 25, maintained in an axially fixed position relative to the halyard 75 by means of a lock 24, and a lower second portion 26, coupled to the upper first portion 25 in a freely rotating manner around a cylindrical symmetry axis of the swivel 2. The lock 24 allows to prevent the torque exerted, in use, by the furler 6 through the stay 11 from being transmitted to the halyard 75. In more detail, the upper first portion 25 presents a fourth terminal 21 for the connection to the halyard 75, while the lower second portion 26 presents a fifth connection terminal 22 for a second clamp terminal 31 carried rigidly by the upper end portion of the stay 11, and a sixth connection terminal 23, preferably provided with a respective rotating shackle for the head of the sail 9. In particular, it is clearly apparent from figure 1 that, during furling/unfurling operations of the sail 9, the sixth connection terminal 23 is brought into rotation by

the stay 11 substantially at the same time as the second clamp terminal 31 and the fifth connection terminal 22.

At this point, with particular reference to figures 3 and 4, it should be noted that the furling device 1 comprises a tubular sheath 7 that houses the stay 11 and is coupled to it in an integral manner only at a respective head portion, indicated by number 77 in figure 1.

In particular, the sheath 7 comprises a plurality of tubular segments 71 presenting preferably, although without limitation, cylindrical shape and equal longitudinal extension. These tubular segments 71 are maintained stably coupled two by two through respective connecting members 16. With particular reference to figure 3, each connecting member 16 comprises a tubular body 17 preferably presenting cylindrical symmetry, for instance a sleeve that hereinafter will be indicated with the same number 17 for the sake of simplicity. This sleeve 17 delimits an inner space 18, which presents preferably cylindrical shape, houses, in use, a portion of the stay 11, and presents an inner diameter/cross section of greater extension than the diameter/cross section of the elongated body 11. The elongated body 11 is therefore coupled with clearance inside each respective connecting member 16; consequently, the stay 11 is not able, in use, to transmit torque to the connecting members 16. In more detail, with reference to figure 3 again, the intermediate portion of the sleeve 17 presents an annular element 19 with increased thickness extending preferably according to a transverse median plane of the same sleeve 17. The sleeve 17 furthermore presents two side portions 13 extending at opposite sides from the annular element 19 and presenting preferably, although without limitation, equal longitudinal extension. In use, to couple tubular segments 71 together in order to prepare the sheath 7, the end portions of these tubular segments 71 are coupled longitudinally through insertion in the side

portions 13 of a respective connecting member 16, until longitudinally to abut against the annular element 19, which is therefore able to act as a bilateral stop/abutment for the insertion of each tubular segment 71. In this regard it should be noted that each tubular segment 71 of the sheath 7 presents a respective inner diameter greater than the outer diameter of each side portion 13 of a respective connecting member 16. Each tubular segment 71 is therefore coupled to each respective connecting member 16 in a freely rotating manner. Furthermore, with reference to figures 1 and 2, the furling device 1 preferably comprises a blocking member 72 for the sheath 7; this blocking member is carried by the stay 11 in a position interposed between the lower end of the sheath 7 and the first clamp terminal 32, and therefore at opposite side from the head portion 77 of the sheath 7. This blocking member 72 is coupled to the elongated body 11 in a stable and longitudinally fixed manner, to prevent at least one of the tubular segments 71 of the sheath 7 from being uncoupled from the respective connecting member 16. Therefore, in view of the above description, the sheath 7 substantially presents a modular structure comprising a plurality of aligned tubular segments 71 mainly coaxial with the stay 11. In particular, these tubular segments 71 are longitudinally held between the blocking member 72 and a first tubular segment 71', associated with the head portion 77 and integrally coupled to the elongated body 11. It should be also noted that, thanks to the interposition of the connecting member 16, each tubular segment 71 can freely rotate axially not only relative to the stay 11 but also to any tubular segment 71 of the sheath 7.

In view of the above description, it is clearly apparent that the set of the stay 11 and of the sheath 7 may be interpreted as a furling group 10 able, in use, to act as a winding drum for furling the sail 9 in the device

1. It is also clearly apparent that the set of all the connecting member 16 associated with the sheath 7 may be interpreted as a connecting group 15 for the tubular segments 71.

At this point it should be specified that each connecting member 16 is made preferably, although without limitation, of a semi-rigid material, for instance plastic like low-density polyethylene, which cannot be compressed or, anyway, can be only poorly compressed/deformed due to the radial compression exerted by the sail 9 on the sheath 7 during furling/unfurling operations performed when the sail 9 is working and exposed to the wind action. Moreover, it should be noted that the longitudinal extension of each side portion 13 of a connecting member 16 is comprised between 1/20 and 1/3 of the longitudinal extension of the respective tubular segment 71, and preferably between 1/5 and 1/3 of the longitudinal extension of this tubular segment 71. In this way, only the intermediate portions of the tubular segments 71 comprised between two opposite side portions 13 can be partially deformed under the radial compression exerted by the sail 9, as these intermediate portions are not internally supported by side portions 13 of respective connecting members 16 that cannot be substantially compressed. Moreover, these intermediate portions of the tubular segments 71 may present only limited deformations/compressions as, as it is well known, the value of the compression deformation of a tubular body is substantially in inverse proportion to the longitudinal extension of the portion of this tubular body onto which the radial compression acts. Therefore, also during the furling/unfurling of the sail 9, the deformation of the intermediate portions of the tubular segments 71 is so limited that it is not sufficient to make the sheath 7 locally integral with the elongated body 11. Therefore, with the exception of the first head tubular segment 71',

the stay 11 is not able, in use, to transmit a torque to the tubular segments 71, that are therefore still able to rotate independently of one another and freely around the elongated body 11. It is clearly apparent that this prevents, in use, the prior art problem of the so-called "counter-rotation" that avoids the free unfurling of the sails, i.e. this prevents portions of the sail 9 from being partially furled again.

In view of the above description it is therefore clearly apparent that the modular sheath 7 and the respective furling group 10 are able to overcome the drawbacks of the prior art. In fact, if an undesired situation like that of figure B occurs, the tubular segments 71, associated with the intermediate portion of the sail 9 that is remained caught, are free to rotate relative to the remaining portions of the sheath 7, thus allowing to free this intermediate portion of the sail.

The sheath 7 allows therefore correctly to furl/unfurl the sail 9, preventing this sail from being subjected to shear stresses that could damage it. Moreover, the modular sheath 7, as it presents tubular segments 71 free to rotate independently from one another, is not subjected to torsion deformations that could jeopardize its functionality and decrease its operating life.

Lastly, it should be noted that the connecting members 16, being preferably made of polyethylene, are at least partially longitudinally flexible; thus, the modular sheath 7 according to the present invention presents the advantage of being flexible and of allowing to stowing the sail 9 also in limited spaces, and at the same time it presents a resistance against radial compression due to the presence, at regular distances, of the connecting members 16, and this allows to overcome the drawbacks of the prior art.

The use of the sheath 7, of the furling group 10 and, more in general, of the furling device 1 according to the

present invention is clearly apparent from the description below and the utility model IT'764, whose teachings, as expressly stated above, are considered integrated in this patent application, and therefore no further explanations are needed. It is however clearly apparent that modifications and variants can be made to the device 1 described and illustrated herein, without however departing from the protective scope of the present invention.

For instance, with reference to the first variant illustrated in figure 5, the annular element 19 of each connecting member 16 may be provided at both the sides with respective conical portions 19' for facilitating insertion and alignment of the tubular segments 71 of the sheath 7 on the respective connections 16.

Moreover, with reference to the second variant illustrated in figure 6, the furling device 1 may be provided with a regulating device 50 for adjusting the position of the tack point of the sail 9 to vary the shape of the sail and adapt it to the directions of the apparent wind. This regulating device 50 is commonly called "downhaul" and is interposed between the first terminal 32 of the stay 11 and the blocking member 72. With particular reference to figure 6, the regulating device 50 comprises a cursor 52 carried by the stay 11 and designed to slide longitudinally in a free manner between the first terminal 32 and the blocking member 72. This cursor 52 preferably comprises a first and a second parts 521 and 522 that can freely rotate relative to each other and to the elongated body 11. In particular, the upper first part 521 is provided with a seventh connection terminal 56 for the tack pennant 51 of the sail 9, while the lower second part 522 is provided with an eighth connection terminal 53 connected, in use, with a rope 54 associated with a respective circuit usable to adjust the longitudinal position of the cursor 52 along the stay 11. This rope 54

is preferably controlled from the deck, and therefore the cockpit, through at least one return member 55 that is preferably, although without limitation, connected to the third connection terminal 66 carried in a freely rotating manner by the basement 62 of the furler 6.

From a dynamics point of view the operating principle of the second variant of the furling device 1 illustrated in figure 6 is substantially similar to that of the furling device described in the document IT'674. Namely, the torque is generated by the furler 6 and transmitted by it to the first clamp terminal 32 of the stay 11. The torque is then transmitted by the elongated body 11, tensioned by the halyard 75, to the swivel 2 and to the head portion 77 of the sheath 7. In this regard it should be noted that the tack pennant 51 is free from the rotation of the lower portion of the stay 11, as it is connected to the upper first part 521 of the cursor 52 able freely to rotate around the same elongated body 11. Similarly, also the rope 54 is free from the furling motion of the stay 11, as it is integral with the lower second part 522 of the cursor 52 designed freely to rotate around the stay/elongated body 11.

Lastly, it should be noted that the present invention also relates to a method for arranging the furling group 10 inside the furling device 1. This method comprises a step of housing the flexible elongated body 11 inside the tubular sheath 7, followed by a step of coupling integrally at least one portion 77 of the sheath 7 to the elongated body 11. In this regard it should be specified that the present method comprises a step of arranging the tubular sheath 7 by longitudinally coupling two by two a plurality of tubular segments 71 by means of respective connecting members 16. In particular, it should be noted that within the scope of the present invention it is absolutely the same whether the step of arranging the sheath 7 is

completely performed before the step of housing the elongated body 11 inside the sheath 7 or is performed contemporaneously with the step of housing the elongated body 11 inside the sheath 7 inserting sequentially the tubular segments 71 one after another along the elongated body 11. Clearly, in view of the above description, the step of arranging the sheath 7 comprises a sub-step of inserting longitudinally at least one pair of tubular segments 71 in respective side portions 13 of a respective connecting member 16.

CLAIMS

1. A tubular sheath (7) for a furling device (1) for furling a sail (9) of a boat, designed to house, in use, a flexible and substantially non extendable elongated body (11); presenting a given first portion (77) usable, in use, to couple integrally to said elongated body (11); and comprising a plurality of tubular segments (71) and connecting means (15) suitable, in use, stably to couple longitudinally at least two adjacent said tubular segments (71) together; characterised in that said connecting means (15) are designed to couple at least two adjacent said tubular segments (71) in a freely rotating manner relative to each other around a common axial direction.

2. A sheath according to claim 1, characterised in that said connecting means (15) comprise at least one connecting member (16) suitable, in use, to couple to each respective tubular segment (71) in a freely rotating manner.

3. A sheath according to claim 2, characterised in that each said connecting member (16) comprises a tubular body (17) presenting a pair of side portions (13) that are shaped longitudinally to couple with clearance to end portions of the respective adjacent said tubular segments (71).

4. A sheath according to claim 3, characterised in that said tubular body (17) presents internally a space (18) suitable, in use, to house with clearance said elongated body (11); said space (18) presenting a cross dimension exceeding the dimension of each cross section of said elongated body (11).

5. A sheath according to claim 3 or 4, characterised in that said at least one connecting member (16) is made of a material that cannot be substantially compressed under a radial compression that can be exerted, in use, by said sail (9).

6. A sheath according to any one of claims 3 to 5, characterised in that at least one said tubular body (17)

presents an annular element (19) with increased thickness, extending according to a plane transverse to the tubular body (17); said annular element (19) being designed to act as longitudinal abutment for inserting each respective said end portion of a said tubular segment (71) along a said side portion (13).

7. A sheath according to claim 6, characterised in that said annular element (19) presents at least one respective conical portion (19') for facilitating insertion of a said end portion of a respective said tubular segment (71).

8. A furling group (10) for sails (9) of a boat, comprising a stay (11) and a tubular sheath (7) housing internally said stay (11); said stay (11) comprising a flexible and substantially non extendable elongated body (11); characterised in that said sheath (7) is produced according to any one of the previous claims.

9. A furling group according to claim 8, characterised in that said elongated body (11) is integrally coupled only to a given first tubular segment (71') of said sheath (7) and in that said connecting means (15) are designed to avoid said elongated body (11) exerting, in use, a torque on each said tubular segment (71) other than said first given tubular segment (71').

10. A furling group according to claim 8 or 9, characterised by comprising a blocking member (72) for blocking said sheath (7), this blocking member being carried in a longitudinally fixed manner by said elongated body (11) in a position between said sheath (7) and an end portion of said elongated body (11), and being suitable, in use, to prevent uncoupling of at least one of said tubular segments (71) of the sheath (7) from the respective said connecting member (16).

11. A furling group according to any one of claims 8 to 10, characterised in that said elongated body (11) comprises an inner core (3) and at least one outer socket (4) coupled to

each other in a substantially integral manner.

12. A furling device (1) for furling sails (9) of a boat, comprising furling means (6) that can be coupled to said boat; a swivel (2) carried stably, in use, in a head position of a mast of said boat; a furling group (10) comprising a stay (11) and a respective tubular sheath (7) and arranged, in use, between said swivel (2) and said furling means (6) to allow furling/unfurling operations of each said sail (9); characterised in that said furling group (10) is produced according to any one of claims 8 to 12.

13. A device according to claim 12, characterised by comprising regulating means (50) for adjusting the position of the tack point of said sail (9).

14. A device according to claim 13, characterised in that said regulating means (50) for adjusting the tack point position of said sail (9) comprise a cursor (52) carried by said stay (11) in a freely rotating and longitudinally sliding manner in a position between said sheath (7) and an end portion (32) of said stay (11).

15. A device according to claim 14, characterised in that said cursor (52) comprises a first and a second parts (521) and (522) freely rotating relative to each other; said first part (521) presenting a first connection terminal (56) for connecting the tack pennant (51) of said sail (9); said second part (522) presenting a second connection terminal (53) that can be connected to a regulating line (54) for adjusting the longitudinal position of said cursor (52) relative to said stay (11).

16. A device according to claim 12 or 13, characterised in that said furling means (6) comprise a furler (6) provided with a basement (62) that can be coupled to said boat in an axially fixed manner; a third connection terminal (67) carried by said basement (62) in a selectively rotating manner and designed to be coupled to a first terminal (32) of said stay (11); and a fourth connection terminal (66)

carried by said basement (62) in a freely rotating manner and designed to be coupled to the tack pennant (51) of said sail (9).

17. A method for preparing a furling group (10) for a furling device (1) for sails (9) of a boat, comprising a step of housing an elongated body (11) inside a tubular sheath (7), followed by a step of integrally coupling said sheath (7) to at least one given portion of said elongated body (11); characterised by comprising a step of preparing said tubular sheath (7) by coupling at least two adjacent tubular segments (71) longitudinally and in an axially free manner through respective connecting means (15).

18. A method according to claim 15, characterised in that said step of preparing said sheath (7) comprises at least one sub-step of inserting a said tubular segment (71) in a side portion (13) of a connecting member (16) associated with said connecting means (15).

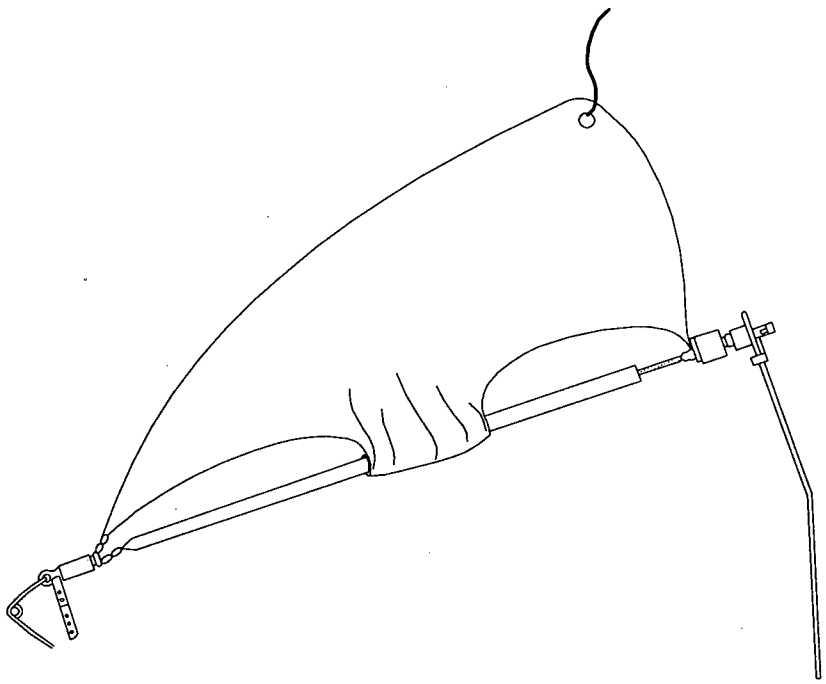


Fig. B

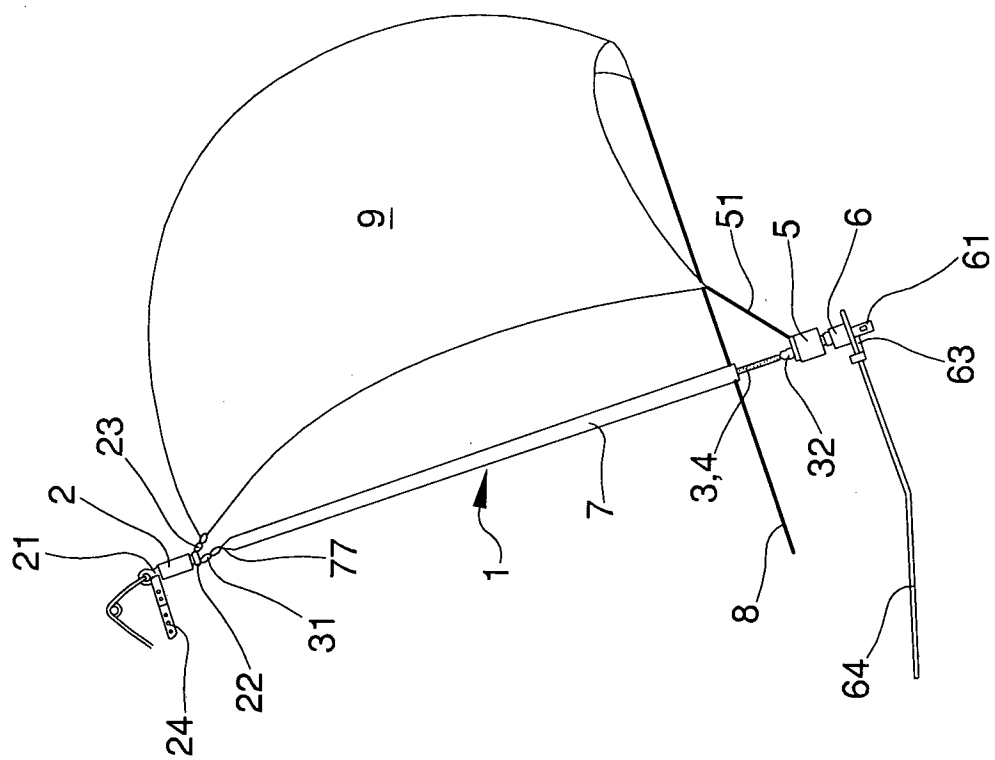


Fig. A

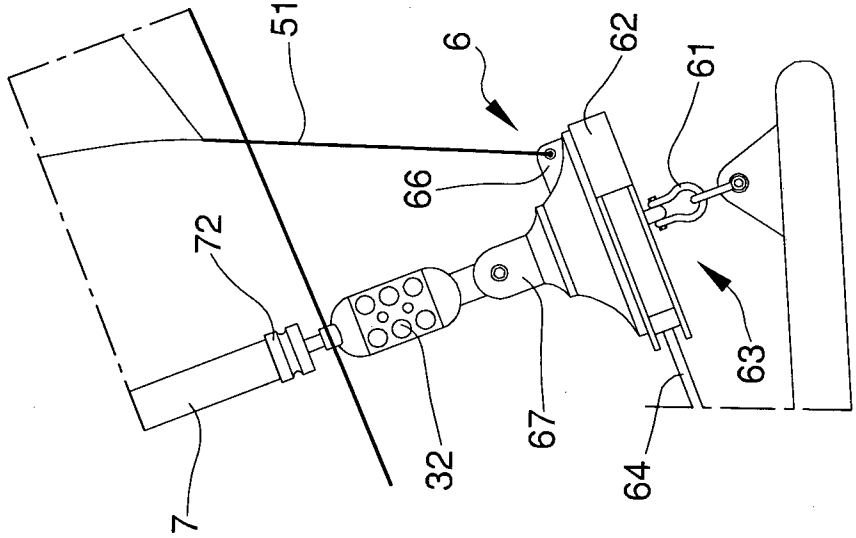

51
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61
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72
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32
64
7

Fig. 2

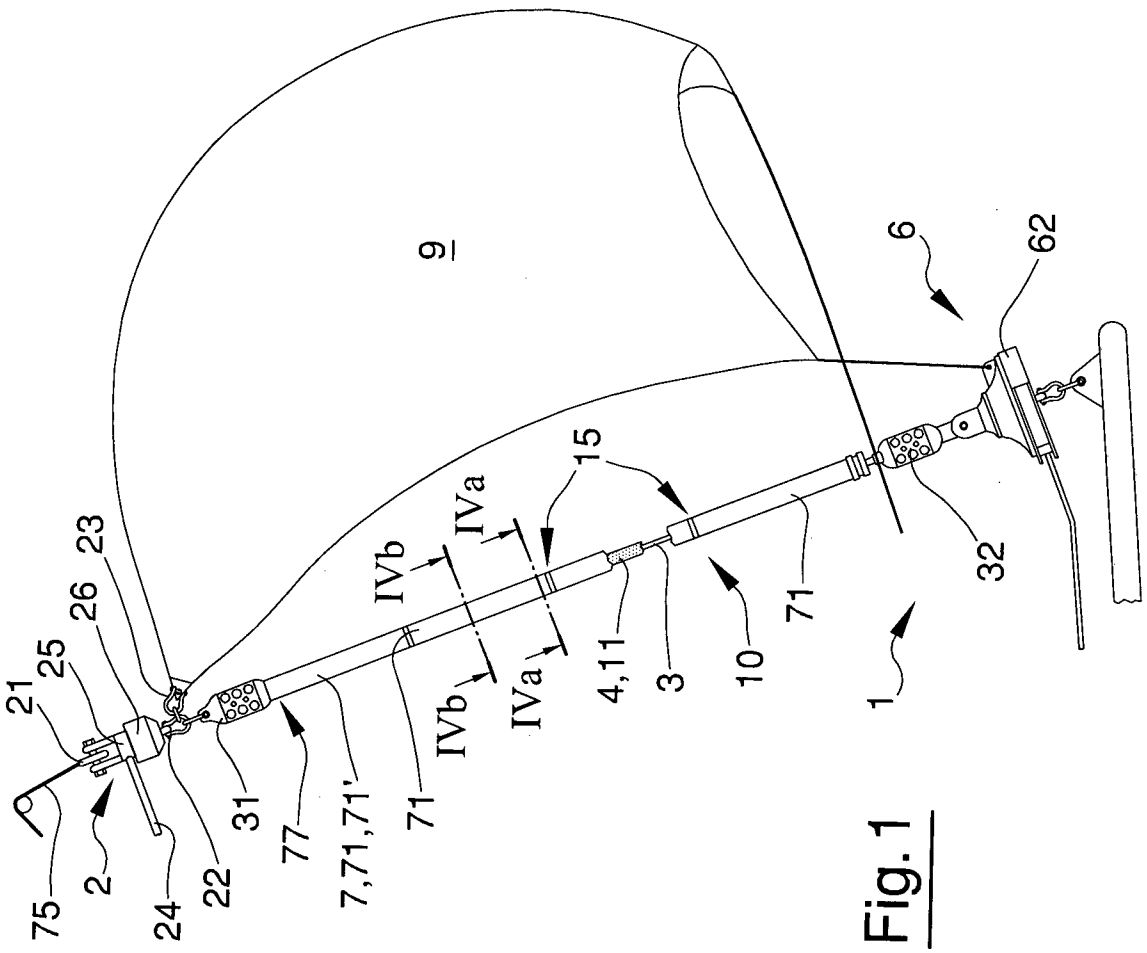
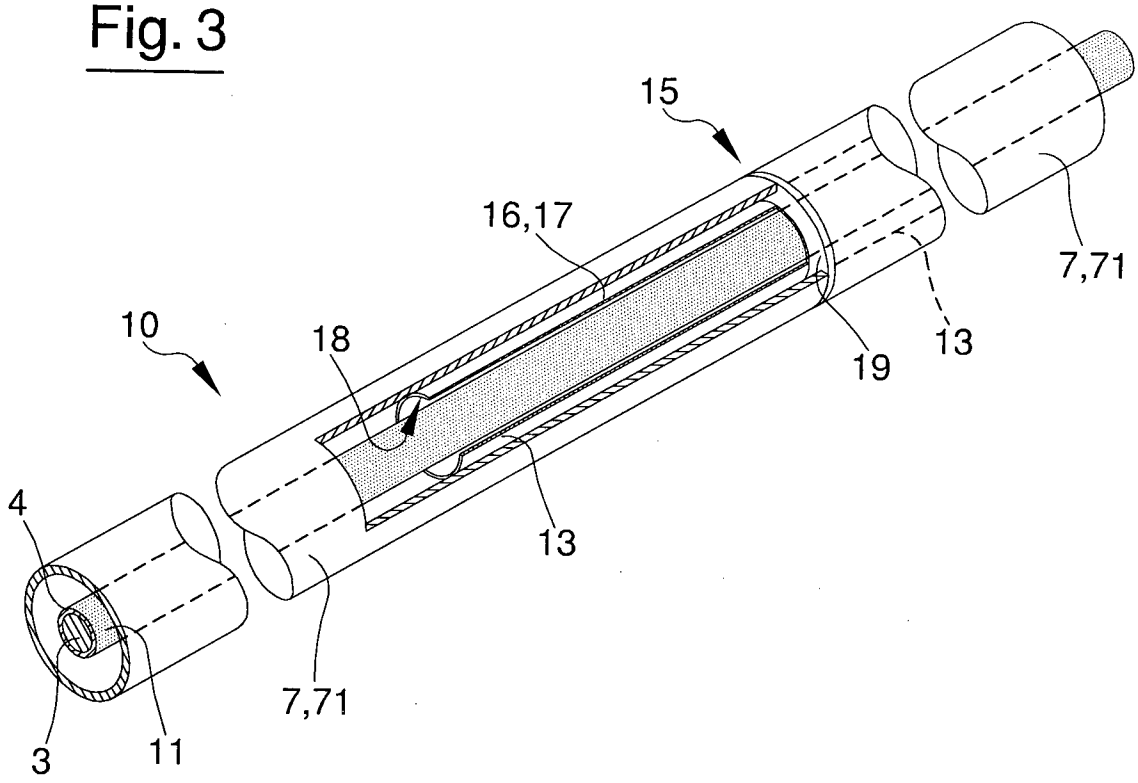

9
6
62
15
IVa
IVb
23
26
25
21
IVb
IVa
4,11
3
10
71
32
1
31
77
7,71,71'
71
22
24
2
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Fig. 1

Fig. 3


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16,17
7,71
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19
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4
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7,71
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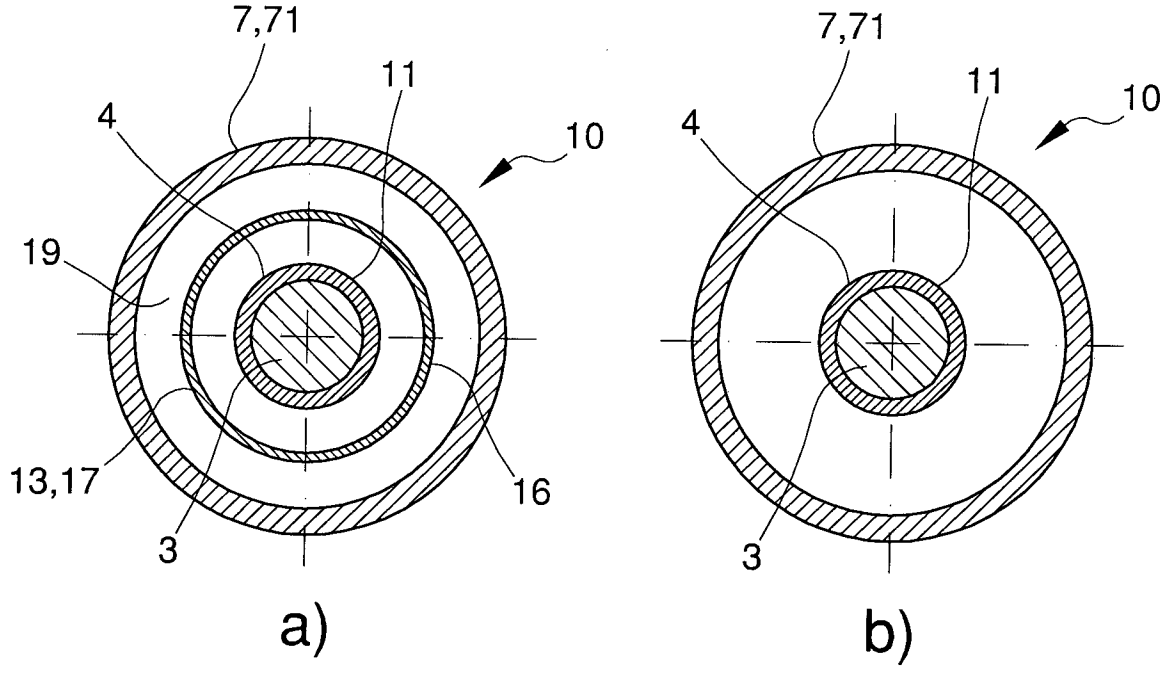

7,71
11
4
10
19
13,17
16
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a)
7,71
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3
b)

Fig. 4

Fig. 5

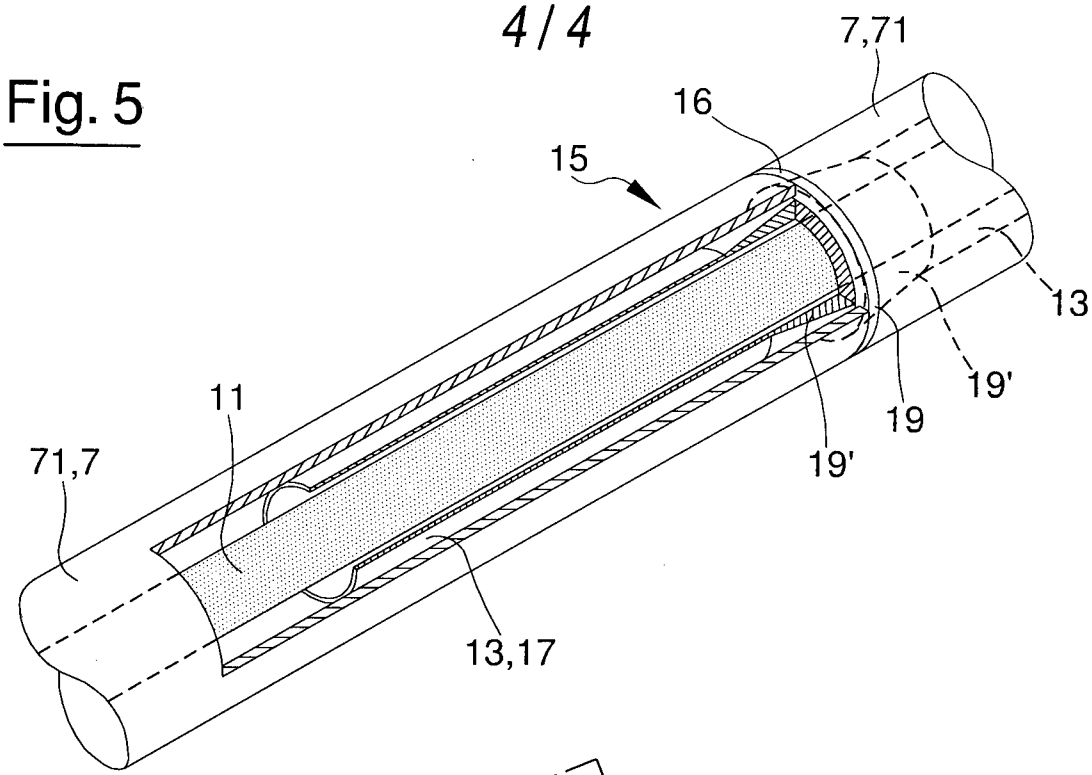
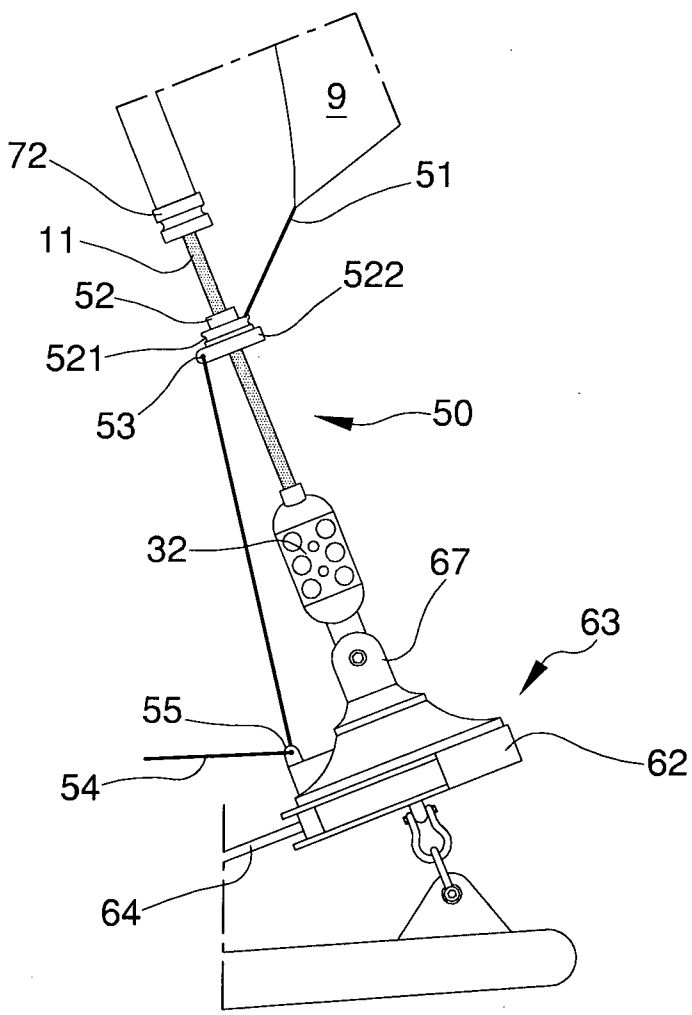

7,71
16
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19'
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19'
11
71,7
13,17

Fig. 6


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521
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INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2013/000304

A. CLASSIFICATION OF SUBJECT MATTER
INV. B63H9/10
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
B63H

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 1 902 942 A1 (GREGHI RENZO [IT]) 26 March 2008 (2008-03-26) column 5, paragraph 31 - column 9, paragraph 105; figures 1-31	1-5,8,9, 12,13, 17,18
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X	FR 2 579 168 A1 (PROENGIN [FR]) 26 September 1986 (1986-09-26) page 1, line 1 - page 2, line 15 page 6, line 31 - page 6, line 37; figure 1	1

-/--

[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
24 May 2013	04/06/2013

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Lendfers, Paul

INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2013/000304

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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