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A. PIVER
AUTOMATIC RELEASE CLEAT FOR SAIL BOATS
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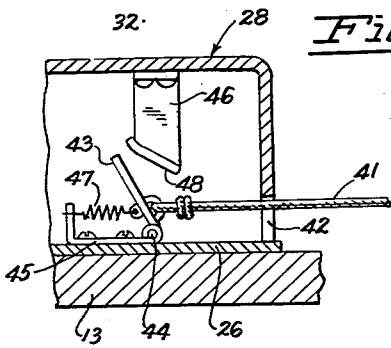


Fig. 4.

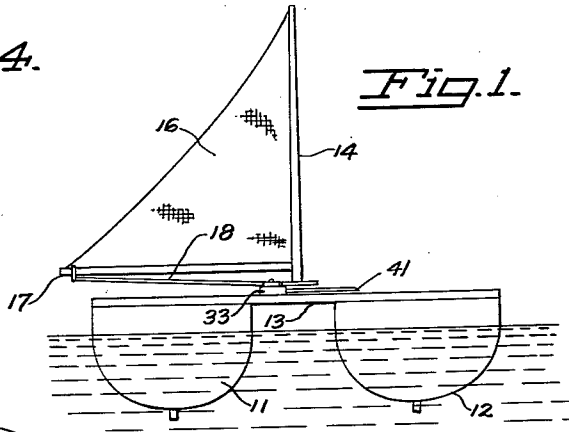


Fig. 1.

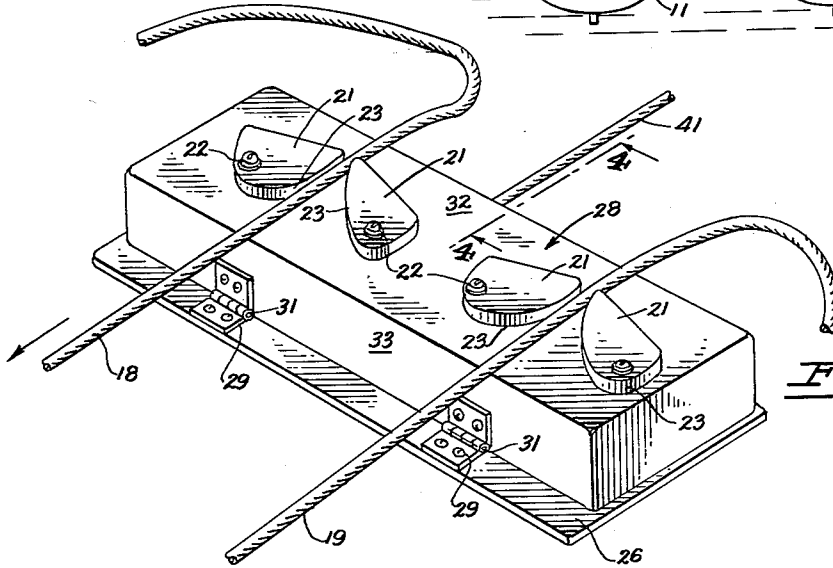


Fig. 2.

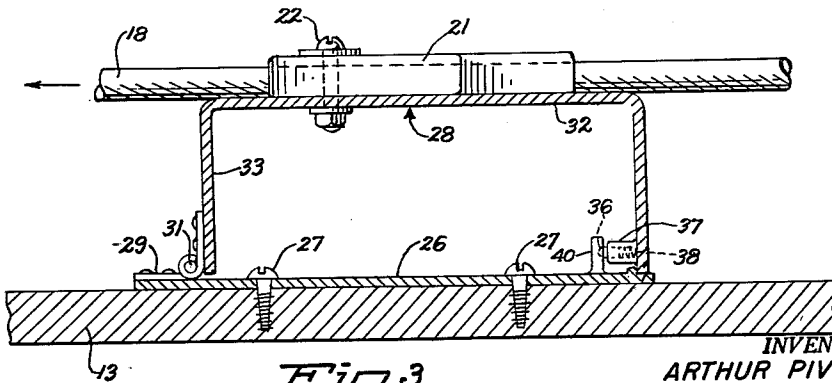


Fig. 3.

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1

3,046,929
AUTOMATIC RELEASE CLEAT FOR SAIL BOATS
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This invention relates to a new and improved automatic release cleat for sail boats.

The present invention provides a safety release for cleats for sail boats. At the present, in certain types of sail boats such as catamarans, the force of wind and the stability of the hull in some instances may combine to cause stresses which will break the mast or rip the sail, or otherwise seriously damage the boat. The present invention provides a cleat to hold the sheet for the sail or boom, such cleat being so constructed that when the forces exceed a predetermined amount the cleat will release, thereby letting go the sail and preventing damage.

The present invention finds particular application in connection with the cam-type cleat, wherein the sheet is held between two eccentric cams. A feature of such cleat is that so long as the sheet is pulled in a direction substantially parallel to the plane of movement of the cams an increase in the force applied to the sheet merely increases the security of its attachment to the cleat. However, when the rope is pulled substantially transversely to the plane of movement of the cams it pulls from between the cams and is released. The present invention provides a mounting for the cam cleats which is pivoted about an axis transverse to the direction of pulling of the rope and further provides means which tends to maintain the cleat in its natural position but which releases upon application of a predetermined amount of pressure to permit the cleat to pivot about the hinge, whereupon the cleat automatically releases the sheet and permits the sail or boom to give way.

A still further feature of the invention is the provision of a safety line which may trail behind the boat and is attached to the automatic release cleat in such manner that when the line is pulled, as by a man overboard, the cleat is released thereby letting go the sail and stopping the boat so that the man overboard may overtake the same by swimming, or pulling along the rope.

A feature and advantage of the present invention is the fact that it can be installed readily in any desired location on an existing or newly constructed boat without the use of special tools and equipment or the exercise of specially trained labor. The device itself is rugged and not subject to adjustment. The moving parts are largely concealed inside a casing where they are protected from weather and other damage.

Other objects of the present invention will become apparent upon reading the following specification and referring to the accompanying drawings in which similar characters of reference represent corresponding parts in each of the several views.

In the drawings:

FIG. 1 is a schematic view showing a catamaran in which the present invention is installed.

FIG. 2 is an enlarged perspective view of an automatic release cleat in accordance with this invention, showing two sheets held therein.

FIG. 3 is a transverse vertical sectional view through the construction of FIG. 2.

FIG. 4 is a fragmentary sectional view taken along line 4—4 of FIG. 2.

The present invention has application in a wide variety of installations, but finds particular application in boats where the hull has considerable lateral stability. Thus, as shown in FIG. 1, the invention is applied to a catamaran having hulls 11 and 12 joined by a deck 13 and having

2

projecting therefrom a mast 14 carrying a sail 16, the outer end of which is supported by a boom 17, to which is connected a sheet 18. Customarily, there are two sheets indicated by reference numerals 18 and 19 in the drawings.

A common means of retaining sheet 18 in a position of adjustment is a cam-type cleat. Such a cleat has a pair of cam members 21, each of which is pivoted by means of bolt 22 passing through the cam member. The cam surface 23 is substantially semi-circular and is eccentric to the pivot 22. The two cams 21 are spaced apart a distance less than the diameter of sheet 18. As best shown in FIG. 2, the sheet 18 is placed between the cam members 21 with the cams 21 slanted rearwardly of the direction of pull of sheet 18, such direction of pull being indicated by the arrow. Application of force in the direction of the arrow tends to pull the cams 21 toward each other as they pivot around the pivots 22. In other words, the application of force on the sheet 18 tends to grip the sheet 18 more securely and the greater the force the more tightly the cam cleat grips the sheet.

Instead of a pair of cams for each of a pair of cleats, as illustrated, a stationary abutment for both cleats may cooperate with a single cam for each cleat.

The foregoing arrangement is generally desirable, but a danger occurs when the force becomes excessive. The stability of the catamaran and other boats on which the present invention is installed prevents the boat from heeling over and relieving the forces applied, and hence may cause the mast 14 to crack or the sail 16 to be torn, or the sheet 18 to break, or may cause other serious damage to the boat.

Accordingly, the present invention provides a means for mounting the cam-type cleat to the deck 13. A base plate 26 is provided which is secured by means screws 27, or the like, to the deck 13. Casing 28 is pivotally connected to plate 26 by means of hinges 29, the axis 31 of hinges 29 being transverse to the direction of pull on the sheet 18. Casing 28 is generally in the form of an inverted open-top box which conceals and protects from the elements the interior of the device. The top 32 of casing 28 provides a broad surface on which the cams 21 of the cleats may be mounted by means of pivots 22, and one side 33 provides a mounting for the hinges 29.

As is apparent from FIGS. 2 and 3, the pull of the sheet 18 or 19 in the direction of the arrows tends to pivot casing 28 around axis 31 and when the casing 28 has pivoted through approximately 90° the sheets 18 and 19 may slip out from between the cams 21, thereby releasing the sail or boom.

A resilient means is provided to resist the pivoting of the casing 28 in the manner referred to in the preceding paragraph. Thus, the side 34 opposite side 33 is provided with a detent 36 protruding from a sleeve 37 mounted on side 34 and biased outwardly therefrom by spring 38. Detent 36 fits in a seat 37 in upward projection 40 of base 26. For normal forces the detent 36 remains in seat 37 and holds the casing in its natural position shown in FIGS. 2 and 3, whereupon any force applied to the sheets 18 and 19 merely results in more secure seating of the sheet in the cleat. However, when severe stresses are imposed spring 38 is overcome and detent 36 escapes from seat 37 permitting casing 28 to pivot around the hinge axis 31 and release the sheet. Accordingly, the force of the spring 38 is selected to provide the necessary safety feature.

As an additional feature of the present invention, there may be provided a rope 41 which trails behind the boat in a position where it may be pulled by a man overboard. Rope 41 extends through an aperture 42 inside of casing 28 and is connected to one end of crank 43 which is pivoted by means of pivot 44 to a bracket 45 on base 26. A second projection 46 extends downwardly from inside

casing 28 to be contacted by crank 43, although spring 47 biases crank 43 out of contact with projection 46. When the rope 41 is tugged the force of spring 47 is overcome causing crank 43 to bear against projection 46 and forcing detent 36 out of its seat 37 against the force of its spring 38 and once again permitting pivotal of the movement of the casing 28 around hinge 31. Projection 46 has a slanted strike plate 48 to facilitate such action. This allows a man overboard to lower the sail or release the boom and stop the boat so that he can overtake the same by swimming or by pulling himself toward the boat by means of rope 41. Alternatively, rope 41 may extend to a remote location, such as a cabin, so that a sail may be released from a position away from the cleat.

Although the foregoing invention has been described in some detail, by way of illustration and example for purposes of clarity of understanding it is understood that certain changes and modifications may be practiced within the spirit of the invention and scope of the appended claims.

What is claimed is:

1. A safety-type sheet retainer comprising a support, a cleat on said support operable when said support is in first position to secure a line and when said support is in second position to release said line previously held in said first position, a base, means mounting said support on said base for movement between said first position and said second position, and resilient means for securing said support in first position, said resilient means being biased to hold said support in said first position until overcome by application of a force exceeding a pre-selected magnitude tending to move said support to said second position.

2. A retainer according to claim 1, which further comprises a safety line, and means for applying the additional force of a pull on said safety line to supplement the forces tending to move said resilient means to second position.

3. A safety-type sheet retainer comprising a support, a cam-type cleat pivotally mounted on support, means for pivotally mounting said support about a pivot axis transverse to the plane of pivotal movement of said cleat,

and a detent resiliently biased to restrain said support against pivotal movement.

4. A safety-type sheet retainer comprising a support, a cam-type cleat pivotally mounted on support, means for pivotally mounting said support about a pivot axis transverse to the plane of pivotal movement of said cleat, said support having an operable position and an inoperable position at an angle to said operable position, a detent and a seat for said detent, said detent and seat being interposed between said support and a stationary base, and resilient means biasing said detent into said seat to maintain said support in operable position until the forces applied overcome said resilient means.

5. A safety-type sheet retainer comprising a support, a cleat on said support comprising a pair of cams pivoted on said support and spaced to engage and secure a sheet positioned between said cams and substantially parallel to the plane of movement of said cams and to release said sheet when at an angle to said plane, a base, hinge means pivotally mounting said support on said base about an axis parallel to said plane and transverse to said sheet, a detent, a seat for said detent, said detent and said seat being interposed between said support and said base, and resilient means biasing said detent and seat into engagement with each other to maintain said support in position to secure said sheet until the force applied to said cleat overcomes said resilient means.

6. A retainer according to claim 5, which further comprises a safety line to trail behind a boat on which said retainer is mounted, a crank pivotally mounted on said retainer and attached to said safety line and operable to bias said support and base apart against the force of said resilient means to overcome said resilient means.

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