A pivotally mounted rope retaining cleat for sailboats having a pressure retarding action to the pivotal movement of the cleat and a releasing action at the full movement of the cleat to release the sail rope and more particularly for use on a catamaran or trimaran sailboat where the sail retaining rope may be set in a cleat to hold the sail at a preferred sailing angle and in the event of a strong wind, the cleat will release the sail rope automatically and prevent the possibility of an overturned or capsized sailboat.
ROPE RETAINING CLEAT WITH AUTOMATIC RELEASE

This invention relates to a rope retaining cleat with an automatic release and more particularly to a pivotally supported cleat for retaining the tension on a sail rope in which the cleat is spring retarded in its pivotal action requiring a predetermined pull on the sail rope to release the rope from said cleat.

The use of a cleat in sailing is not new or novel but is apparently the most useful form of retaining the sail rope. It is apparent in the various forms of sailing, whether downwind where the sailor must be jibbing and the sail may be retained with a cleat and the change of the tiller simply swings the boom across the boat permitting the sail to be retained in a similar position either side of the boat. Also in tacking when the boat is headed upwind it is necessary to execute the change in direction rapidly to take advantage of the momentum of the boat and to fill the sail and continue tacking thus the cleat becomes a very important factor in sailing. The position of the sail of course may vary, for example, with the wind directly behind you, and with the jib and mainsail swung out, they may be set at a 90° angle to the boat's center line. However, if the sail is set for beating, sailing toward the wind, the sail may be set at a 45° angle and it must be tacked from side to side rapidly and the cleat again becomes a very useful means of holding the sail at a desired angle. Likewise in beam reaching, sailing with the wind blowing directly across the beam of the boat with the sail set at a 45° angle, the cleat becomes a most useful holding device especially where there is a lone sailor. In a single hull boat, the sailor may manually perform the duty of a cleat or may use a cleat with ease, manually setting and manually releasing the rope from the cleat. However when the sailboat is a catamaran or trimaran comprised of a plurality of hulls, the cleats are generally set as far out as possible to give full advantage of the use of all sails and it becomes exceptionally difficult to manually set or manually release the sail ropes from the cleats. In fact with a sail retained by a cleat in a catamaran, it may be easily upset by a strong wind if the sail cannot get to the cleat in time to release the sail. Thus it is an object of this invention to overcome this difficulty by the use of an automatic release for the cleat.

It is a further object of this invention to provide a cleat that will jam or hold a rope in the normal position of the cleat and will pivotally lift against a resisting force up to a maximum pull when the rope will be released.

A still further object of this invention is to provide a releasable cleat for a sail rope in which there is a pivotal action to release the rope from said cleat and in which there is a resisting spring that is adjustable to permit setting the resistance to the pivotal action of the cleat.

Further objects of this invention shall be apparent in the accompanying detailed description and the drawings in which

FIG. 1 is a perspective view of the cleat in a closed position,

FIG. 2 is a perspective view of the open position of the cleat as the rope is released,

FIG. 3 B a cross sectional view of the base portion of the cleat of FIG. 1,

FIG. 4 is a cross sectional view of the upper portion of the cleat of FIG. 1,

FIG. 5 is an end view of the cleat on line 5—5 of FIG. 1, and

FIG. 6 is a plan view of a further embodiment.

Referring to the drawings there is illustrated in FIGS. 1 and 2 a releasable cleat for a rope such as a sail rope. The cleat is comprised of an upper half 10 in the form of a cleat for holding the rope and a lower half 11, a base portion for pivotally supporting the upper half. The two parts are pivotally connected by a pin 12. Thus with the base portion 11 in a fixed position and with a sail rope 14 mounted or fixed to the cleat 10, when the sail rope 14 pulls on the cleat, it will pivotally move the upper portion 10 as illustrated in FIG. 2 and will continue to pivotally move portion 10 until the rope 14 pulls itself from the grip of the cleat thus automatically releasing the rope from the cleat. To regulate the pivotal action of the cleat and restrict the degree of pull necessary to release rope 14, FIG. 3 illustrates the manner of resisting the pivotal movement of the cleat 10. The cleat 10 in addition to having the main portion 10, is provided with a downwardly extending arm or tongue 16, arm 16 is provided with a portion 17 having an aperture 18. When the cleat 10 is mounted to the base 11 by pin 12, the lifting of the cleat 10 will swing the arm 16 inward as illustrated in FIG. 3. An element 15 in the form of a rod is positioned in base 11 and may be pivotally attached to arm 16 by a pin 12A passing through aperture 18 of portion 17 of arm 16. Element 15 is also provided with a threadably attached locknut 20 which is threaded onto 15 to a desired position. Element 15 at its other end is threadably secured in a hollow threaded shell or pipe 21 which is passed through an aperture 22 in the backwall 23 of the base 11. A spring 19 is positioned about shell 21 so that the spring abuts with the backwall 23 at one end and abuts with the locknut 20 at the other end. Thus with a proper setting, the spring will force arm 16 to the right, FIG. 3, retaining the upper portion 10 in a normal closed position and as illustrated in FIG. 2 if there is a pull on rope 14 to pivotally lift the cleat 10, the movement of arm 16 will be resisted by spring 19. Thus there must be a steadily increasing pull on line 14 up to a maximum pull to overcome the resistance of spring 19 in order to release rope 14. It is also to be noted that shell 21 at its outer end that extends through the rear wall 23 is provided with a knurled portion for manually gripping to rotate shell 21 to adjust its position on rod 15. However, in adjusting the position of shell 21, the locknut 20 should be released first. After the locknut is released, the shell 21 may be rotated in one direction to increase the resistance of spring 19 or may be turned in the opposite direction to decrease the resistance of spring 19. Thus a definite maximum pressure may be determined at which the cleat will release the rope 14 if the pull on the rope reaches that pressure. It is to be noted that the cleat 10 may take any acceptable form of cleat that is in a V form where the rope is jammed down into the cleat to permit holding. This may be a simple ribbed form as illustrated. The cleat 10 is comprised of a pivot base 10A and a pair of rope holding portions 10B, the two halves 10B are retained together by a pair of bolts 25 and the two halves are secured to the base 10A in any standard form such as by threaded bolts. Thus cleat 10 may use the form of cleat illustrated or may use any V shaped cleat as the retaining means for rope.
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3 and will automatically release rope 14 due to the pivotal action provided by the mounting of the cleat.

Referring to FIG. 6 there is illustrated a further embodiment of this invention in which rod 15 is the piston rod mounted within a cylinder 28, the piston rod 15 being in the form of a plunger operating against a pneumatic or hydraulic pressure. The cylinder 28 may be provided with a pump 29 at its outer end, the pump being in the form of a small cylinder 30 with a piston attached to the outer surrounding portion 31 which is spring pressed outward but may be pushed inward and for each stroke of the pump will introduce fluid into cylinder 28 to build up pressure. The release of pressure from cylinder 28 may be a relief valve 32 mounted to the cylinder so that by pressing plunger 33, the fluid is releasable to drop the pressure in cylinder 28. Thus the fluid cylinder may be set at a desired pressure, may be increased or decreased in pressure so that plunger or piston 15 will retard the movement of the cleat 10 up to a desired pressure.

Although the cleat 10 for holding a rope is well known in the art, due to the need of, having an automatic release for a sailboat rope, the cleat of any particular form as described above is necessarily pivotally mounted and may be attached to any resisting form, as illustrated being a spring resistance, but may similarly be used with a hydraulic or pneumatic cylinder as a resisting means without departing from the spirit of this invention.

The invention described in detail in the foregoing specification is subject to changes and modifications without departing from the principle and spirit thereof. The terminology used is for purposes of description and not of limitation; the scope of the invention being defined in the claims.

What is claimed is:

1. A sailboat holding cleat that is pivotally mounted and pressure resisting in its pivotal movement but line releasing at the extreme pivotal position of the cleat comprising:
   a. a first base upon which a pair of separated oppositely positioned walls project from said base, the opposing interior surfaces of said walls inclined away from each other substantially uniformly from said base to the outer edge of said walls to form a slot to receive and secure a rope, said interior surface having a rough grooved gripping surface to retain said rope, said base having at one end a downward extending tongue and said base supported on a pin to be pivotally movable about said pin.
   b. a second base for mounting and affixing the cleat wherever desired, said second base having a pair of parallel walls in spaced relation and a front wall, said spaced pair of walls bored at one end at the top area of the walls to receive the said pin supporting said first base and retain said first base in a pivotal mounting, said first base resting on the walls of said second base in a horizontal position and pivotally movable about said pin in a lifted position.
   c. a resisting element mounted between the spaced walls of said second base, said resisting element at one end passing through and bearing against said front wall and at its opposite end bearing against the downwardly extending tongue of said first base to thus resist the pivotal movement of said first base when the pull on said line pivotally lifts said first base holding said cleat.

2. In a device according to claim 1 in which said resisting element being adjustable to increase or decrease the degree of resistance to the pivotal action of the cleat.

3. In a device according to claim 1 in which said resisting element is a compression resisting spring and said compression resisting element is a threaded rod to permit adjusting the degree of compression of said spring.

4. In a device according to claim 1 in which said resisting element is a fluid filled cylinder having a piston and rod provided with means to increase or decrease the pressure charge within said cylinder to in turn vary the compression resistance of said cylinder.

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