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3,585,663
**LONGITUDINALLY ADJUSTABLE SURFBOARD
 FIN WITH SELF-CONTAINED LOCKING
 MECHANISM**

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10 Claims

ABSTRACT OF THE DISCLOSURE

Secured within the rearward underside section of a surfboard is a surfboard fin mounting box with a channel and a pair of longitudinally extending runners formed in their margins with cutaway zones that define a keyway. A wedge-shaped block has tabs defining a key sized to fit through the keyway. A fin base has a section that also has tabs defining a key sized to fit through the keyway. A push arm coupled to the wedged-shaped block can be manually operated to force the wedge-shaped block into tight interlocking relationship with the fin base in order to securely position a fin attached to the fin base.

BACKGROUND OF THE INVENTION

This invention relates to a surfboard fin assembly and more specifically to a surfboard fin assembly that can be quickly and safely mounted within and shifted longitudinally along a mounting box.

Conventional surfboards ordinarily have a skeg or fin rigidly fixed to the rearward undersurface portion of the surfboard. While this typical arrangement serves to perfectly align the fin and stabilize the surfboard, the resulting unavoidable lack of versatility and removability makes storage and handling of the surfboard and its accessories very cumbersome. Restriction to a single fin design also minimizes the range of maneuvers that can be undertaken by the surfer.

In order to overcome the above mentioned disadvantages of fixed fins the concept of an easily removable surfboard fin was developed as is fully described in U.S. Pat. 3,422,471 to Morey et al. issued Jan. 21, 1969. A related approach for a demountable and interchangeable surfboard fin is disclosed in copending U.S. application, Ser. No. 737,413 filed June 17, 1968, now U.S. Pat. No. 3,516,099 and entitled Mounting Structure for Removable Surfboard Fin.

A more advanced approach for increasing the versatility of demountable and interchangeable surfboard fins is disclosed in copending U.S. application, Ser. No. 811,810 filed Apr. 1, 1969, and entitled Sectional and Longitudinally Adjustable Surfboard Fin Assembly. In essence this structure embodies a fin base section with tapered exterior side walls sized for wedging engagement against complementary tapered interior side walls of a mounting box. The fin base section can be selectively interlocked with a fin section by employing a retaining plate that is slidably coupled to the fin base section and is located within an elongated channel formed by the fin base section. The retaining plate has a positioning groove for receiving a portion of the fin section.

Most surfboard fin assemblies constructed like those mentioned above require the surfer to use a screwdriver, wrench or the like in order to tighten the fin at a selected longitudinal location against the fin base section or associated mounting box. If the surfer is compelled to store the tightening tool in a remote location or inadvertently misplaces the tool then it becomes annoying when he wishes to adjust the longitudinal position of the fin for undertaking a different surfing maneuver.

As shall be fully described the locking mechanism of this invention is totally incorporated within the surfboard fin assembly itself and therefore the surfer is not bothered by the requirement to use external tools.

BRIEF SUMMARY OF THE INVENTION

Briefly stated, this invention concerns a surfboard fin assembly that (1) can be easily assembled for use or display and dismantled for storage or shipment, (2) embodies a self-contained locking mechanism so that external tools are not required, and, (3) is structured so that the fin section can be swiftly locked in place and released for being repositioned.

The surfboard fin assembly has a fin mounting box installed within the undersurface of a surfboard. The mounting box has an elongated channel defined in part by a pair of spaced longitudinally extending side walls and a pair of inwardly extending elongated runners that are attached to the mounting box side walls. A wedge-shaped block positionable in the channel mounts a push arm that projects outwardly and downwardly from the mounting box so it can be easily grasped by a surfer and slid longitudinally along the channel.

Structured to interlock with the wedge-shaped block is a fin base having a pair of elongated flanges positioned to overlap and bear against the exterior runner walls. The fin base defines a ramp structure for receiving and interlocking with the wedge-shaped block.

In order to stabilize the position of the fin base and thereby fix the position of an associated fin, a surfer may grasp the push arm and slide the wedge-shaped block progressively forward from a retracted position. As the wedge-shaped block enters and slides along the ramp structure with a camming action, the fin base flanges are forced to bear tightly against the mounting box runners to eventually firmly clamp the fin base in a desired position. To release the locking action the surfer merely moves the push arm to a retracted position and, after the fin base has been shifted to a different longitudinal position, he thrusts the wedge-shaped block forwardly into locking engagement again.

The wedge-shaped block has a longitudinally oriented slot extending from one end that defines a pair of tapered prongs. The fin base has an intermediate narrow web, shaped to interfit with the slot and a pair of tapered guideways formed in part by the ramp structure which are shaped to receive the prongs.

Cut-out zones on the inner margins of the runners constitute a keyway through which a first key defined by the wedge-shaped block and a second key defined by the fin base may pass in order to enter the fin mounting box channel.

To facilitate alignment a series of sockets formed on the exterior runner walls may interfit with a series of corresponding pegs formed on the fin base elongated flanges.

BRIEF DESCRIPTION OF THE DRAWINGS

The numerous benefits and unique aspects of the present invention will be fully understood when the following detailed description is studied in conjunction with the drawings in which:

FIG. 1 is a perspective view partly broken away, showing the longitudinally adjustable surfboard fin installed in the rearward section of a surfboard;

FIG. 2 is an exploded view showing the relationship between the wedge-shaped block and fin base components before they are mutually interlocked; and,

FIG. 3 is a sectional view taken along line 3—3 of FIG. 2 showing the cross sectional shape of the push arm.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

FIG. 1 depicts a conventional surfboard 10 with its rearward undersurface section 11 formed with a rectangular cavity 12. Securely locked or bonded within cavity 11 is a surfboard fin assembly 13 having a fin mounting box 14 with fore and aft sections 15 and 16 respectively. Box 14 has a longitudinally extending elongated channel 17 formed in part by a pair of laterally spaced side walls 18.

Extending inwardly towards one another from the mounting box side walls 18 is a pair of elongated runners 19 and 20 formed with exterior walls that are exposed in FIG. 1 and interior walls that are concealed in FIG. 1. The forward section of runners 19 and 20 define a keyway 21 constituted by a series of cut-out zones 22 in runner 19 and cut-out zones 23 in runner 20.

The inner margins of runners 19 and 20 are shaped with a series of sockets 24 and 25 respectively which, as shall be fully explained, serve to assist in accurately longitudinally positioning components of the surfboard fin assembly 13.

A first interlocking means constituted by a wedge-shaped block 26 is integrally formed with or otherwise coupled to a push arm 27 that depends from the rearward portion of the wedge-shaped block 26. Block 26 coacts with a fin base 28 that incorporates a second interlocking means in order to clamp the skeg or fin 29 in a desired position.

As clearly shown in FIG. 2 fin base 28 is integrally formed with a pair of elongated flanges 30 and 31 which, when fin base 28 is firmly secured to fin mounting box 14, snugly fit against the exterior surfaces of runners 19 and 20 respectively. Fin base 28 has a ramp structure 32 and a series of tabs 33 extending laterally from opposing sides of ramp structure 32. Tabs 33 constitute a key sized to fit through keyway 21 shown in FIG. 1 in order to allow fin base 28 to become partially inserted within channel 17.

Fin base 28 has a vertically extending intermediate narrow web 34 which, along with ramp structure 32, define a pair of tapered guideways 35 and 36 that converge in a rearward to forward direction.

The upper or concealed surfaces of flanges 30 and 31 are formed with a series of pegs 37 shaped to fit into and interlock with sockets 24 and 25 in runners 19 and 20. For purposes of describing this aspect of the invention only a few pegs 37 are shown together with a pair of rearwardly disposed transverse pegs 38. The positions of the pegs and sockets could be interchanged.

Wedge-shaped block 26, which is shaped to tightly interfit with fin base 28, includes a longitudinally oriented slot 39 extending rearwardly from the leading edge to an intermediate location. A pair of tapered prongs 40 and 41, defined in part by slot 39, are shaped to straddle web 34 and fit into tapered guideways 35 and 36 respectively. A vertically aligned rib 42 is positioned to contribute strength to the rearward portion of wedge-shaped block 26.

Extending laterally from prongs 40 and 41 are tabs 43 and 44 respectively that, together, form a key structure. The eight tabs 40 and 41 constituting the key structure of block 26 are sized to register with and fit through the eight cut-out zones 22 and 23 constituting the keyway 21 of the fin mounting box 14.

The thickness of the upper fin base section and ramp structure 32 as well as the thickness of wedge-shaped block 26 are dimensioned to be slightly smaller than the lateral distance across channel 17.

As shall be explained fully fin 29 can be adjustably positioned by shoving block 26 from a retracted position in a direction indicated by arrow 45 into a tight interlocking fit with fin base 28.

Referring now to FIG. 3 it can be seen that the forward wall portion of push arm 27 is characterized by a

relatively large radius and that the side wall portions eventually converge to define a sharp angular rearward wall portion. The purpose of this configuration is to reduce the effects of drag and thereby promote streamlined movement of push arm 27 as it travels in the wake of fin 29.

Operation

Keeping the above construction in mind it can be understood how the previously stated disadvantages of conventional surfboard fin assemblies are overcome or substantially eliminated by the present invention.

A surfer is able to haul the surfboard fin assembly 13 to a selected surfing area with the wedge-shaped block 26 and fin base 28 conveniently and safely detached from one another as well as from the fin mounting box 14.

To accurately and stably arrange the fin 29 for surfing maneuvers, the surfer first installs the wedge-shaped block 26 into the channel 17 of the fin mounting box 14 by registering the tabs 43 and 44 of the associated key structure with the cutout zones 22 and 23 of the keyway 21. After the push arm 27 is manipulated to move the wedge-shaped block 26 sufficiently rearwardly then ramp structure 32 of the fin base 28 is similarly inserted into the channel 17 by registering the tabs 33 of the associated key structure with the cut-out zones 22 and 23 of the keyway 21.

The surfer is now ready to tightly lock the fin 29 in a selected longitudinal position without resorting to external hardware of implements such as screwdrivers, wrenches or cranks, etc., and, without utilizing any screws, bolts, nuts or other customarily employed fasteners.

Fin base 28 is held at a predetermined location against fin mounting box 14 with pegs 38 inserted into corresponding sockets 24 and 25 in order to facilitate alignment. Push arm 27 is then manipulated by a hand or single finger to progressively shove the wedge-shaped block 26 in direction 45 along ramp structure 32 and into interlocking relationship with the fin base 28. As the tapered prongs 40 and 41 are thrust deeper into their corresponding tapered guideways 35 and 36 on opposing sides of the intermediate narrow web 34 then they cam against the ramp structure 32 and force the base 28 deeper into the channel 17. This coaction pulls the elongated flanges 30 and 31 against their corresponding elongated runners 19 and 20 with ever-increasing force until the desired interlock is completed. At this point in time the surfer may release the push arm 27 and begin surfing.

In the highly unlikely event that block 26 and base 28 become loosened from one another it would be virtually impossible for either to become detached from box 14 because the keys would be required to slip through the keyway 21. Rushing water during surfing would thrust them rearwardly and away from keyway 21.

In order to adjust the fin position relative to the longitudinal axis of the surfboard 10 and fin mounting box 14 the surfer is merely required to break the locking force by retracting the push arm 27, shift the fin base 28 to the next selected position, and, manipulate the push arm 27 to restore the locking force.

From the foregoing it will be evident that the present invention has provided a longitudinally adjustable surfboard fin assembly with a self-contained locking mechanism in which all of the various advantages are fully realized.

What is claimed is:

1. A surfboard fin assembly comprising:

- (a) a fin mounting box with an elongated channel defined in part by a pair of spaced longitudinal extending side walls;
- (b) first interlocking means insertable within the channel;
- (c) a push arm coupled to the first interlocking means and shaped to project outwardly from the mounting box so it can be grasped by a person; and,

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- (d) a fin base defining second interlocking means arranged to interlock with the first interlocking means in response to selective manual operation of the push arm.
2. The structure according to claim 1, wherein:
 a pair of elongated runners extend inwardly towards one another from the mounting box side walls, the runners having exterior and interior walls, the first interlocking means is a wedge-shaped block, the fin base includes a pair of elongated flanges arranged to overlap and seat against the runner exterior walls, and,
 a ramp structure sized to receive and interfit with the wedge-shaped block,
 wherein, the push arm may be manually moved from a retracted position to slide the wedge-shaped block over the ramp structure to thereby cause clamping action between the fin base flanges and mounting box runners and hold the fin base firmly in a desired position.
3. The structure according to claim 2, wherein the push arm is arranged so that it is always aligned rearwardly of the fin base with respect to the direction of intended forward movement by a surfboard.
4. The structure according to claim 2, wherein the push arm depends generally perpendicularly relative to the fin mounting box plane, and, its cross section is shaped to reduce drag.
5. The structure according to claim 2, including:
 a longitudinally oriented slot extending from one wedge-shaped block end to an intermediate location; and
 an intermediate narrow web defined by the fin base and sized to fit into the slot to mutually orient the wedge-shaped block and fin base.
6. The structure according to claim 5, including:
 a pair of tapered prongs defined in part by the slot; and
 a pair of longitudinally tapered guideways formed in part by the ramp structure and intermediate narrow web, the guideways being sized to receive and interfit with the prongs.
7. The structure according to claim 2, including:
 a keyway defined by cut-out zones on the inner margins of the runners;
 a first key defined by first tabs extending laterally from the wedge-shaped block; and
 a second key defined by second tabs extending laterally from the fin base, the first and second keys being sized to fit sequentially through the keyway in order to admit the wedge-shaped block and fin base to their relative positions within the mounting box channel.
8. The structure according to claim 2, including:
 a series of sockets formed on the exterior runner walls; and
 a series of pegs formed on the fin base elongated flanges, the pegs being sized and spaced to interfit with corresponding sockets in order to assist in clamping together the fin base and wedge-shaped block.
9. A surfboard fin assembly with a self-contained locking mechanism, comprising:
 (a) a fin mounting box with an elongated channel defined in part by a pair of spaced longitudinally extending side walls;
 (b) a pair of elongated runners extending inwardly

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- towards one another from the mounting box side walls, the runners having exterior and interior walls;
- (c) a keyway defined by cut-out zones on the inner margins of the runners;
- (d) a wedge-shaped block insertable within the channel;
- (e) a longitudinally oriented slot extending from one wedge-shaped block end to an intermediate location;
- (f) a pair of tapered prongs defined in part by the slot;
- (g) a first key defined by first tabs extending laterally from the wedge-shaped block;
- (h) a push arm coupled to the wedge-shaped block and shaped to project outwardly from the mounting box so it can be grasped by a person;
- (i) a fin base having a pair of elongated flanges arranged to overlap and seat against the runner exterior walls;
- (j) a ramp structure sized to receive and interfit with the wedge-shaped block;
- (k) an intermediate narrow web defined by the fin base and sized to fit into the wedge-shaped block slot to mutually orient the wedge-shaped block and fin base;
- (l) a pair of longitudinally tapered guideways formed in part by the ramp structure and intermediate narrow web, the guideways being sized to receive and interfit with the prongs;
- (m) a second key defined by second tabs extending laterally from the fin base, the first and second keys being sized to fit sequentially through the keyways in order to admit the wedge-shaped block and fin base to their relative positions within the mounting box channel,
 wherein the push arm may be manually moved from a retracted position to slide the tapered prongs over the ramp structure and into the tapered guideways to thereby cause clamping action between the fin base flanges and mounting box runners in order to hold the fin base firmly in a desired position.
10. The structure according to claim 9, wherein:
 the push arm is arranged so that it is always aligned rearwardly of the fin base with respect to the direction of the intended forward movement of a surfboard,
 a series of sockets are formed on the exterior runner walls, and
 a series of pegs are formed on the fin base elongated flanges, the pegs being sized and spaced to interfit with corresponding sockets in order to assist in clamping together the fin base and wedge-shaped block.

References Cited

UNITED STATES PATENTS

3,422,471	1/1969	Morey et al.	9—310
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