

[54] **FIN ATTACHMENT STRUCTURE FOR SURFBOARDS**

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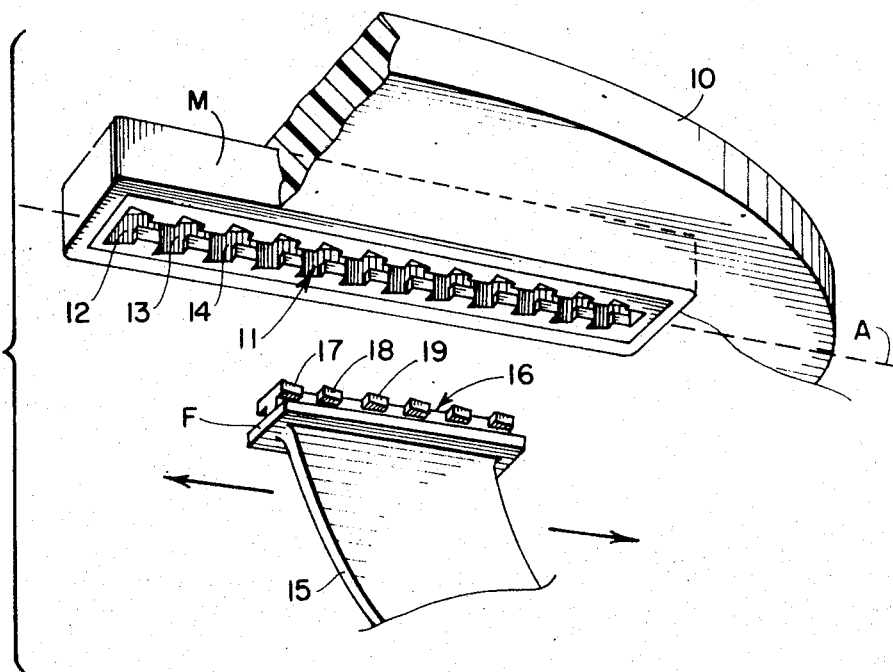
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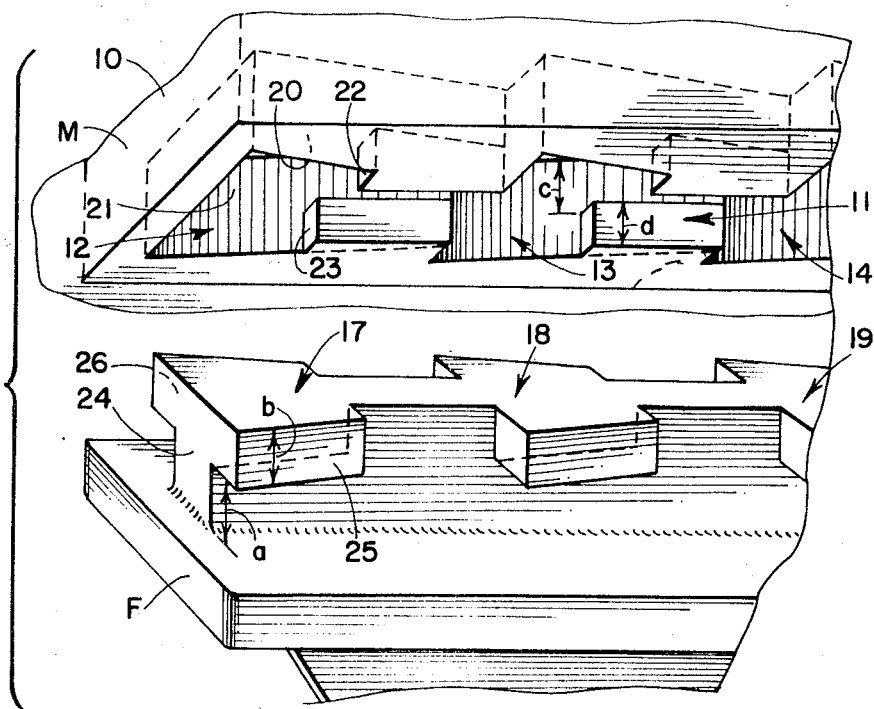
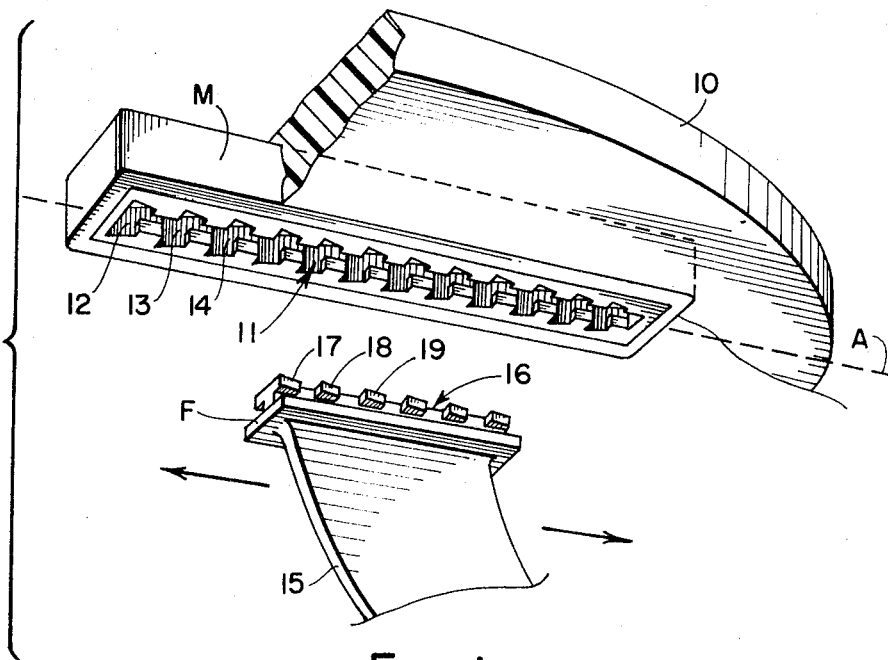
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[57] **ABSTRACT**

A means for securing a fin to a surfboard in a desired adjusted longitudinal position is provided in the form of a mounting box imbedded on the under rear surface of the surfboard for cooperation with a fin base structure on the fin. The box defines an elongated channel having a series of enlargements in the form of cavities for cooperation with a series of flanges formed on a longitudinal rib on the fin base. The cavities each include undercut portions for reception of the flanges so that the rib may be inserted in the channel and the entire fin base then urged longitudinally to cause the flanges to engage within the undercut portions of the cavities. By providing converging walls in each of the cavities, a wedging action takes place with respect to the flanges to secure in a very tight position the fin to the surfboard. The desired longitudinal position of the fin relative to the surfboard can be preselected by preselecting portions of the series of the cavities with which the flanges are to cooperate.

7 Claims, 2 Drawing Figures





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FIN ATTACHMENT STRUCTURE FOR SURFBOARDS

This invention relates to an improved fin attachment structure for surfboards.

BACKGROUND OF THE INVENTION

Conventional surfboards are normally provided with a fin or skeg on a rear undersurface portion. For purposes of shipping surfboards in large quantities, it is common practice to provide the fins in such a manner that they may be removed from the board and later installed at an outlet store. A further advantage of a removable type of surfboard fin is the fact that other geometrically shaped fins may be substituted for the normal fin to provide the board with different characteristics.

In addition to the feature of a removable fin, it is also desirable to provide some means of enabling longitudinal adjustment of the position of the fin relative to the surfboard. This longitudinal positioning is important in determining certain characteristics of the board with respect to a given surfer.

Many different types of attachment for surfboard fins have been proposed. Most devices as are available, however, generally require screws or bolts or equivalent keying members or elements for affixing the fin to the surfboard. While the resulting arrangements have produced excellent results so far as enabling mounting the fin to the board, there is involved a time factor in actually securing or removing the fin as well as problems associated with possible losing of certain of the auxiliary components necessary to secure the fin.

BRIEF DESCRIPTION OF THE PRESENT INVENTION

With the foregoing in mind, it is a primary object of the present invention to provide an improved fin attachment structure for surfboards wherein a fin may be very easily inserted or removed in a minimum of time and without the necessity of any auxiliary components such as screws or bolts or keying elements in securing the fin in place. Further, the arrangement is such that the longitudinal position of the fin relative to the surfboard can readily be adjusted.

Briefly, the foregoing object is realized by providing means on the rear undersurface of the surfboard itself defining a series of cavities along the longitudinal axis of the board. Each of these cavities includes undercut portions. The fin itself includes a base structure comprised of a series of flanges including portions overhanging the base dimensioned for reception in the cavities and within the undercut portions. Wall portions of these undercut portions converge to thereby effect a wedging action on the engaging portions of the flanges when urged into the undercut portions.

By providing a greater number of cavities than flanges so that the cavities extend for a greater longitudinal distance along the bottom of the surfboard, the flanges may be received in a portion of the series of cavities closer to or further from the rear of the surfboard so that the longitudinal position of the fin is readily adjustable. Since the cavity structures and cooperating flanges may be integrally formed or at least integrally secured within the bottom rear portion of the surfboard and on the fin base respectively, there are no additional components such as screws, bolts, or keying inserts as have often been required heretofore.

BRIEF DESCRIPTION OF THE DRAWINGS

A better understanding of the invention will be had by now referring to the accompanying drawings, in which:

FIG. 1 is an exploded fragmentary perspective view of a rear portion of a surfboard and cooperating fin showing the attachment structure in accord with a preferred embodiment of the invention; and,

FIG. 2 is another fragmentary perspective view, greatly enlarged, of portions of the attachment structure shown in FIG. 1.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to FIG. 1 there is shown the rear portion 10 of a surfboard having imbedded on its underside an elongated mounting box M substantially coaxial with the longitudinal axis A of the surfboard. The downwardly facing surface of the box M is substantially flush with the undersurface of the board as shown.

The box defines an elongated channel designated generally by the arrow 11 of given width facing downwardly and having a series of laterally enlarged cavities spaced longitudinally along the channel such as indicated at 12, 13, and 14. As will become clearer as the description proceeds, each of the cavities includes undercut portions.

The fin for the surfboard is indicated at 15 secured to a fin base F. This fin base includes a projecting rib designated generally by the numeral 16. The thickness of this rib is slightly less than the given width of the channel 11 in the mounting box M so that the rib can be received in the channel.

As shown, this rib includes a series of laterally extending flanges above the base of the rib and longitudinally spaced along the rib for reception in the cavities. Certain ones of these flanges are designated at 17, 18, and 19. The arrangement is such that the ribs may be respectively received in a corresponding number of cavities and the fin base F then urged rearwardly to cause the flanges to be received in the undercut portions of the cavities and thus secure the fin to the surfboard. By providing a greater number of cavities than flanges, for example from 1½ to 3 times, a portion of the series of the cavities can be selected for reception of the flanges and thus the longitudinal position of the fin 15 may be adjusted relative to the end of the surfboard. This adjustability feature is indicated by the arrows in FIG. 1.

The manner in which actual securement of the fin base flanges in the cavities of the channel takes place will become clearer by now referring to the enlarged fragmentary view of FIG. 2. In the preferred embodiment of the invention, the various cavities are all of substantially identical dimensions and the various cooperating flanges are similarly of identical dimensions. Therefore, detailed description of one of the cavities and one of the flanges will suffice for the series of cavities and flanges as shown.

In the particular embodiment illustrated in FIG. 2, it will be noted that the enlarged cavity 12 formed in the channel 11 includes opposite side walls 20 and 21 converging towards each other in a rearward direction. Each cavity includes undercut portions to leave over hanging lips such as indicated at 22 and 23 defining in effect remaining upper side wall portions of the channel 11. In one sense, the structure of the entire channel 11 can be visualized as composed of opposite side walls of sawtooth configuration constituting essentially mirror images of each other, upper edge portions of the sawtooth for each wall being filled in as by the lips 22 and 23 to define the undercut portions of the cavities.

Referring now to the base fin flange structure, it will be noted that the rib 16 widens laterally at point 24 for the flanges 17 to define flanges 25 and 26 overlying the fin base F. The dimensioning of the flanges is such that they can readily be received in the opposing cavity 12 and then, upon rearward movement of the entire fin base, the flanges engage within the undercut portions beneath the lips 22 and 23 respectively.

In the preferred embodiment, as shown, the end surfaces of the flanges 25 and 26 converge towards each other in a rearward direction at an angle corresponding to the angle of convergence of the cavity walls 20 and 21 so that when the flanges are received beneath the lips 22 and 23, full surface engagement takes place.

If the distance of the over hanging flange such as 25 from the fin base F is designated *a* and the thickness of the flange such as 25 in a vertical direction designated *b* and similarly if the distance of the undercut portions beneath the lips in the cavities is designated *c* and the thickness of the lips designated

d such as shown for the cavity 13, it will be evident that the distance a should be slightly greater than the distance d and the distance c should be slightly greater than the distance b. By so dimensioning the flanges and cavities in this matter, the flanges can readily be received beneath the lips defining the undercut portions of the cavities.

OPERATION

In operation, the desired longitudinal position of the fin 15 relative to the rear of the surfboard is determined. The rib 16 and associated flanges are then simply urged into the opposing cavities in the mounting box M. Thereafter, the fin base F is urged or slid rearwardly until the flanges are received in the undercut portion of the cavities and thoroughly wedged therein as a consequence of the converging walls of the undercut portions. The fin is thus thoroughly locked to the underside of the surfboard in a desired position.

To remove the fin, it is only necessary to urge the fin in a forward direction preferably by applying a force to the rear end of the base F of the fin in a forward direction to slide the flanges forwardly in the cavities thus releasing them from their positions beneath the lips of the cavities. The fin may then be simply pulled downwardly from the various cavities.

The foregoing arrangement provides for a very stable and secure locking of the fin to the surfboard. Yet, no auxiliary components such as screws, bolts, or keying inserts are necessary. Moreover, the attachment and detachment of the fin can take place very quickly and without the use of any special tools.

While the converging walls of the cavities have been defined as the opposite side walls, it will be evident that the undersurfaces of the lips could converge downwardly in cooperation with an upwardly converging floor portion for the channel to provide a desired wedging action. In this event, the flanges would decrease in thickness in a rearward direction in order to cooperate with the converging portions of the cavities.

Further, while the convergence has been shown and described as extending rearwardly, the walls in the cavities and end portions of the flanges could converge forwardly as by reversing the channel box and fin base 180° so that after insertion of the rib in the channel, the fin would be wedged forwardly to lock it in place.

The invention accordingly is not to be thought of as limited to the one particular embodiment set forth merely for illustrative purposes.

What is claimed is:

- 1. A fin attachment for surfboards, comprising, in combination:
 - a. means defining in the rear undersurface of a surfboard a series of cavities along the longitudinal axis of the board including undercut portions; and
 - b. means providing on the base of the fin for said surfboard a series of flanges including portions overhanging the base dimensioned for reception in said cavities and engagement, upon movement of said base, within said undercut portions, wall portions of said undercut portions converging to effect a wedging action on said overhanging portions of said flanges when urged therein.
- 2. The subject matter of claim 1, in which there are provided a greater number of cavities than flanges so that a portion of the series of cavities for reception of a corresponding number of flanges may be selected in accordance with a desired longitudinal positioning of said fin relative to said surfboard.
- 3. A fin attachment structure for surfboards, comprising, in combination:

a. an elongated mounting box for imbedding in the rear central under surface of a surfboard with a longitudinal axis of said box substantially coaxial with the longitudinal axis of said surfboard, said box defining an elongated channel of given width facing downwardly and having a series of laterally enlarged cavities spaced longitudinally along said channel, each cavity including undercut portions to leave a series of over hanging lips defining remaining upper side wall portions of said channel; and

b. a fin base to which the fin for the surfboard is secured, said fin base including a projecting rib of thickness slightly less than said given width to be received in said channel, said rib having a series of laterally extending flanges above the base of the rib and longitudinally spaced along the rib for reception in said cavities, said cavities including converging wall portions in a rearward direction and said flanges being dimensioned such that after insertion of said rib in said channel, said fin base may be urged rearwardly to wedge said flanges into said undercut portions so that said lips overlie said flanges, said flanges being frictionally secured in tight engagement in said cavities as a consequence of said converging wall portions.

4. The subject matter of claim 3, in which said converging wall portions constitute the side walls of said cavities, the outer end surfaces of said flanges converging towards each other in a rearward direction at substantially the same angle as said wall portions so that substantially full contact takes place between said end surfaces and wall portions.

5. The subject matter of claim 3, in which each of said cavities in said series of cavities is substantially identically dimensioned and each of said flanges in said series of flanges is substantially identically dimensioned, there being from 1½ to 3 times as many cavities as flanges so that the longitudinal positioning of said fin base along said mounting box is adjustable.

6. In combination: a surfboard, a removable and longitudinally adjustable fin member for mounting on said surfboard, and an elongated receptacle member fixedly attached to said surfboard for removably receiving said fin member, said fin member including a base portion having a plurality of wedge shaped members formed therein, said receptacle member having a plurality of sockets formed therein for receiving said wedge shaped members in holding engagement therewith, said sockets including wedge shaped sections into which the wedge shaped members can be initially inserted and wedge shaped undercut sections into which said wedge shaped members are positioned to provide the holding engagement, said receptacle member being of a greater longitudinal extent than said fin member base portion, and having a number of sockets greater than the number of wedge shaped members of the fin, so that a portion of the sockets may be selected for reception of the wedge shaped members in accordance with a desired longitudinal positioning of said fin relative to said surfboard.

7. In combination: a surfboard, a removable fin member for mounting on said surfboard, and an elongated receptacle member fixedly attached to said surfboard for removably receiving said fin member, said fin member including a base portion having a plurality of wedge shaped members formed therein, said receptacle member having a plurality of sockets formed therein for receiving said wedge shaped members in holding engagement therewith, said sockets including wedge shaped sections into which the wedge shaped members can be initially inserted and wedge shaped undercut sections into which said wedge shaped members are positioned to provide the holding engagement.

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