

[54] SWIM FIN

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abandoned.

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[51] Int. Cl.² A63B 31/10

[58] Field of Search 9/308, 309; 36/2.5 AL

[56] **References Cited**

UNITED STATES PATENTS

2,588,363	3/1952	De Corlieu	9/309
3,112,503	12/1963	Girden	9/309
3,183,529	5/1965	Beuchat	9/309
3,396,479	8/1968	Primak	36/2.5 AL
3,530,595	9/1970	Vogel	36/2.5 AL

FOREIGN PATENTS OR APPLICATIONS

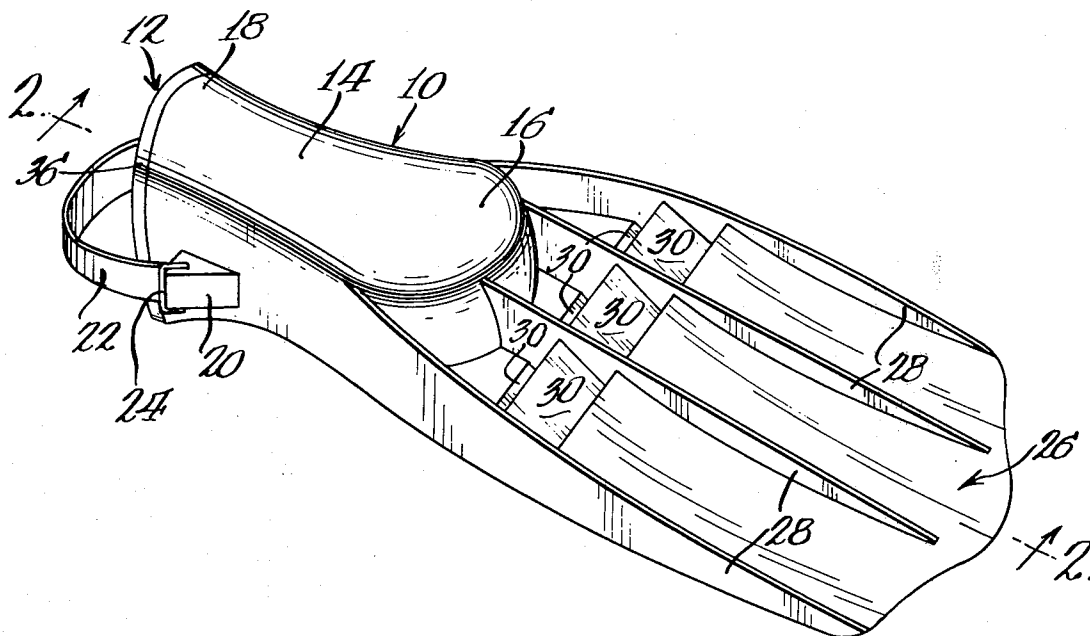
1,361,409	4/1964	France	9/309
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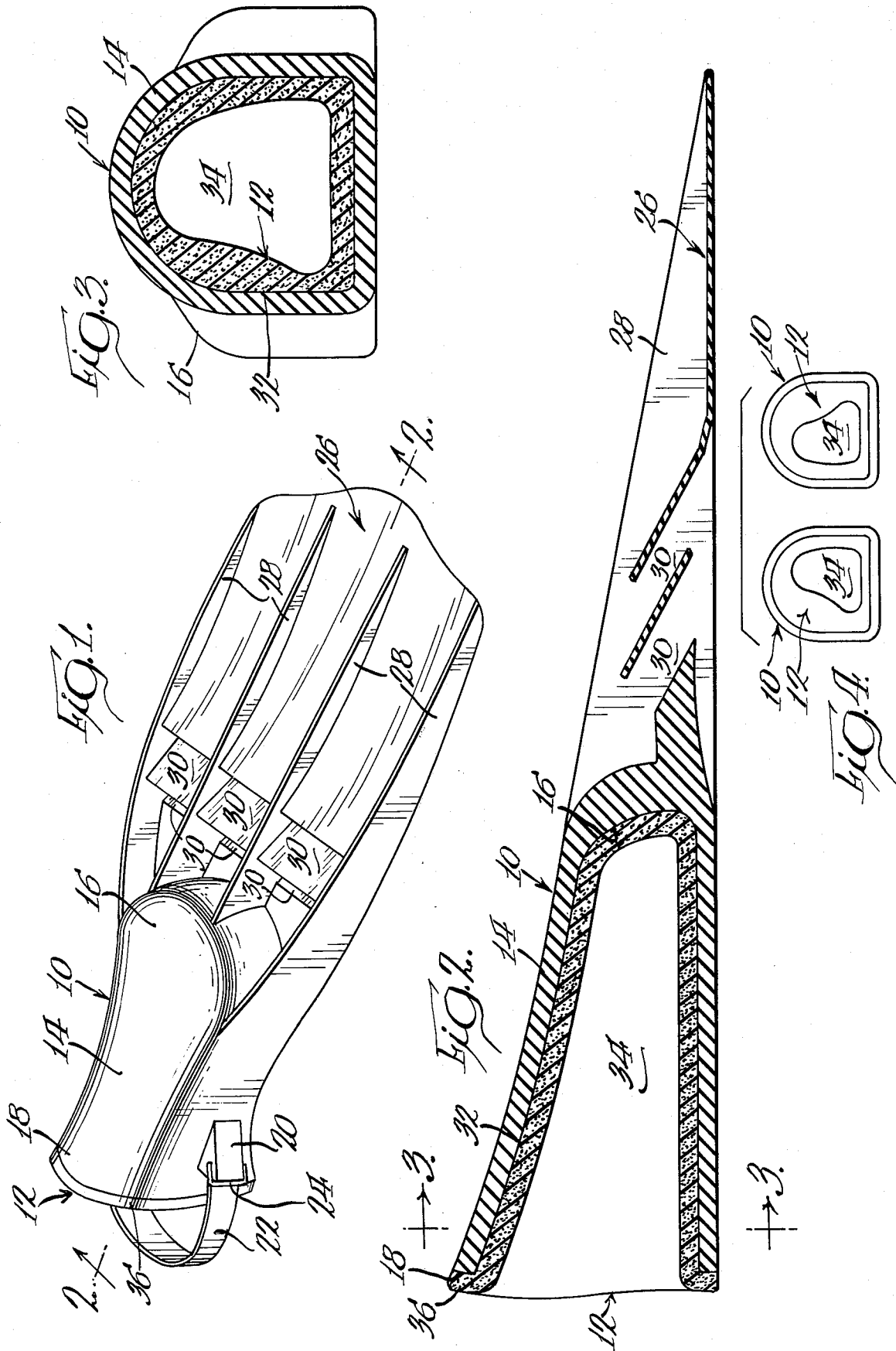
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[57] **ABSTRACT**

A swim fin having a hollow foot-receiving portion, an open heel portion and a flexible blade integral with and extending forwardly of a closed toe portion. A strap is provided to engage a swimmer's heel to hold the fin on the swimmer's foot. To allow a single size fin to be used with swimmers having different size feet, the invention comprehends removable, hollow inserts which may be received in the foot-receiving portion of a fin, each insert further having a hollow foot-receiving cavity therein. A plurality of such inserts having different interior cavity sizes are provided and are readily interchangeable. In addition, the foot-receiving portion of the fin itself is made sufficiently large so as to be capable of receiving a swimmer's foot when the same is encased in a boot.

4 Claims, 4 Drawing Figures





SWIM FIN

This is a continuation of application Ser. No. 280,732, filed Aug. 14, 1972, now abandoned.

BACKGROUND OF THE INVENTION

This invention relates to swim fins, and more particularly, to a swim fin that may be easily adapted to snugly fit the feet of different swimmers having different foot sizes and which may be used with foot protective boots if desired.

The upsurge in the popularity of recreational pursuits of all kinds has resulted in an upsurge in the popularity of skin diving as well. In skin diving, a swimmer will usually wear a pair of flippers or swim fins on his feet for increased propulsion in the water. In order that a swimmer be comfortable, it is necessary that a foot-receiving cavity customarily found on such fins be sized appropriately to a swimmer's foot.

As a result of the comfort consideration, it has heretofore been necessary to manufacture a large variety of fins, each differing from the others principally in the size of the foot receiving cavity therein. A swimmer may then select a set of fins having a foot-receiving cavity that is appropriate to that swimmer's foot.

This approach is not desirable because of a variety of factors. Firstly, merchandisers of such swimming equipment must maintain a large inventory of fins to insure that all sizes are available. Similarly, manufacturers of fins must expend far greater sums of money in terms of tooling and dies so as to produce the varied sizes of swim fins.

Even the swimmer himself notices disadvantages with this system. For example, in some waters, swimmers will wear protective boots on their feet onto which the fins must be slipped. Thus, the size of the boot must be taken into account when purchasing fins. Should an occasion arise wherein such protective boots are not required, and the swimmer, for convenience or comfort, wishes to swim without such boots, it will be appreciated that the fins purchased with boots in mind will be too large to be worn comfortably. Thus, the swimmer may be forced to buy another set of swim fins for barefoot use.

To at least partially solve some of the foregoing difficulties, various proposals have been advanced whereby the size of a foot receiving cavity of a swim fin may be varied. For example, adjustable straps have been used. Other approaches are disclosed in U.S. Pat. No. 2,672,629 to LaTrell; No. 2,903,710 to Wozencraft; and No. 3,178,738 to LaTrell. Also of possible pertinence to the invention hereof is U.S. Pat. No. 3,668,793 to Stohr, et al.

SUMMARY OF THE INVENTION

It is the principal object of the invention to provide a new and improved swim fin. More particularly, it is an object of the invention to provide a swim fin construction wherein a single size of fin may be adapted for use by swimmers having different size feet and may alternately be used barefooted or in conjunction with a protective boot.

The exemplary embodiment achieves the foregoing objects in a swim fin construction including a hollow footreceiving portion having both a closed toe portion and an open heel portion along with a flexible blade integral with and extending forwardly of the toe portion.

Means are provided across the opening of the heel portion to engage a swimmer's heel to hold the swimmer's foot in the foot receiving cavity. According to the preferred embodiment, such means include an adjustable strap.

Preferably, the foot-receiving cavity of the hollow foot portion is sized sufficiently large so that it may take comfortably a boot worn by a swimmer having relatively large feet.

A hollow foot-receiving insert is located within the cavity. The hollow of the insert is sized to conform to a given swimmer's foot. The cavity in the fin is such as to receive any one of a plurality of such inserts, each having a different size interior foot-receiving cavity of its own so that by selecting an appropriately sized insert, the fin may be used with swimmers having substantially different size feet. In addition, with the insert removed, the fin is adapted to receive a boot clad foot of a swimmer.

Preferably, the insert is formed of a resilient, soft material so as to maximize comfort of the wearer. This also permits the fabrication of the fin itself out of a relatively tough material so that both the life of the fin and the comfort of the wearer can be maximized.

According to the preferred embodiment, the insert is formed of a foam and has a relatively larger outer dimension adjacent its own toe portion and the interior of the cavity of the fin is similarly configured so that once inserted, the insert is not free to drop from the cavity of the fin, but rather, it held in place by its own resilience.

Other objects and advantages of the invention will become apparent from the following specification taken in conjunction with the accompanying drawings.

DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a swim fin embodying the invention;

FIG. 2 is a vertical section taken approximately along the line 2—2 of FIG. 1;

FIG. 3 is a vertical section taken approximately along the line 3—3 of FIG. 2; and

FIG. 4 illustrates, somewhat schematically, how two fins in a pair may receive inserts molded to fit an individual swimmer's foot.

DESCRIPTION OF THE PREFERRED EMBODIMENT

With reference to the accompanying drawings, the invention is seen to include a swim fin, generally designated 10, and an insert 12 therefor. The swim fin 10 includes a hollow foot-receiving portion 14 having a closed toe 16 and an open heel 18. The latter may be provided with integral lugs 20 (only one of which is shown) on opposite sides of the open heel for receiving an adjustable strap 22 which may cooperate with buckle-like elements 24 to adjust the effective length of the strap 22 in a conventional manner.

Forwardly of the toe portion 16 and integrally therewith, is a flexible blade, generally designated 26. The blade 26 includes longitudinally extending reinforcing ribs 28 integral with both the blade and the foot receiving portion 14. Adjacent the closed toe 16 of the fin 10 and between the reinforcing ribs 28 are vent openings 30 which decrease the resistance to movement of the fin through the water during the downstroke of the foot of a swimmer swimming face down in the water.

The insert 12 has an outer surface 32 shaped to conform to the interior surface of the foot receiving portion 14 of the fin 10. In this regard, it will be observed from FIGS. 1 and 3 that the toe portion 16, and particularly the inner surface thereof, is somewhat bulbous compared to the remainder of the foot receiving portion 14 at least intermediate the length thereof and generally in a horizontal direction. As the insert 12 is similarly formed and is preferably formed of a resilient material such as foam, it will be appreciated that the same will yield while being inserted into the foot receiving portion 14 and thereafter expand within the bulbous toe portion 16 to be resiliently retained therein so that the same cannot inadvertently fall from the fin once inserted. Thus, inadvertent disconnection of the insert 12 from the fin 10 is precluded.

The use of a resilient material such as foam to form the insert 12 has another advantage as well. In particular, the foam is much more comfortable to the feet of a barefooted user of the swim fin than the material out of which the fin itself is formed. Moreover, this feature of the invention permits the fin to be formed of the toughest, most durable and yet suitable material whereby both durability of the fin and comfort of the wearer can be maximized.

The insert includes a foot receiving cavity 34 which may be sized to receive a particular size of foot. Thus, a plurality of inserts each having different size interior cavities 34 may be interchangeably employed with but a single size of the fin 10. Moreover, if desired, the interior cavity 34 of the insert 12 may be custom formed to an individual swimmer's foot at the time of purchase if desired, employing conventional forming and molding techniques using the purchaser's foot as a die for the interior cavity 34.

Finally, if desired, the open end of the insert 12 may be provided with an outwardly flared peripheral lip 36 engaging the end of the foot-receiving portion 14 of the fin 10 so as to absolutely preclude uncomfortable contact between the bare feet of a swimmer and the harder material with which the fin 10 may be formed.

From the foregoing, it will be appreciated that the invention provides a novel swim fin and insert combination whereby a single size fin can be selectively fitted with a variety of different inserts to be adapted to use by swimmers having different size feet. Moreover, it will be appreciated that a fin made according to the invention is susceptible to both booted and barefooted swimming by a single swimmer in that the former can be achieved simply by removing the insert to provide the additional space required for a booted foot. It will also be appreciated that the invention maximizes comfort to the wearer while permitting maximum durability of the fin itself and that the invention is susceptible to custom forming of the cavities of the insert to completely maximize the comfort of the swimmer.

I claim:

1. In a swim fin including a hollow foot portion

adapted to receive a swimmer's foot and having a closed toe portion and an open heel portion, a flexible blade integral with and extending forwardly of said toe portion and strap means extending across the opening at the heel portion and adapted to engage a swimmer's heel to hold the swimmer's foot in the foot portion, the improvement comprising: a hollow toe and instep-receiving insert wedged into said hollow foot portion from the open heel portion thereof, said insert having an exterior surface snugly engaging the interior surface of said hollow foot portion and having an interior cavity with a surface formed of a relatively soft material and engaged with the toe and instep portion of a swimmer's foot, said insert being removable from said hollow foot portion and being replaced with a similar insert having a different size interior cavity whereby a single size swim fin can easily be adapted and sized for different size feet of different swimmers.

2. The swim fin of claim 1 wherein said insert is formed of a resilient material and said hollow foot portion has at least one interior dimension adjacent said toe portion greater than the corresponding interior dimension adjacent the heel opening whereby the insert, when received within said hollow foot portion is releasably confined therein.

3. In a swim fin including a hollow foot portion adapted to receive a swimmer's foot and having a closed toe portion and an open heel portion, a flexible blade integral with and extending forwardly of said toe portion and strap means extending across the opening at the heel portion and adapted to engage a swimmer's heel to hold the swimmer's foot in the foot portion, the improvement comprising: a hollow toe and instep-receiving insert received within said hollow foot portion, said insert having an exterior surface snugly engaging the interior surface of said hollow foot portion and an interior cavity having a surface formed of a relatively soft material and adapted to engage the toe and instep portion of a swimmer's foot, said insert being removable from said hollow foot portion and adapted to be replaced with similar inserts having different size interior cavities whereby a single size swim fin can easily be adapted and sized for different size feet of different swimmers, said foot portion and said blade are formed from a relatively tough material to provide long life and resistance to wear and wherein said insert is formed of a relatively softer material and has an outwardly flared lip at the entry opening into the hollow foot portion, said lip overlapping the edges of the opening at the heel portion of the fin to provide a cushioned edge thereby preventing abrasion to the swimmer's foot by contact with the edge of the fin opening.

4. A swim fin according to claim 3 wherein the interior cavity of said insert is configured to substantially conform to the shape of the toe and instep portion of a predetermined wearer's foot.

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