Nov. 5, 1963 C. M. GLENN 3,109,186

LEG FIN

Filed April 6, 1962

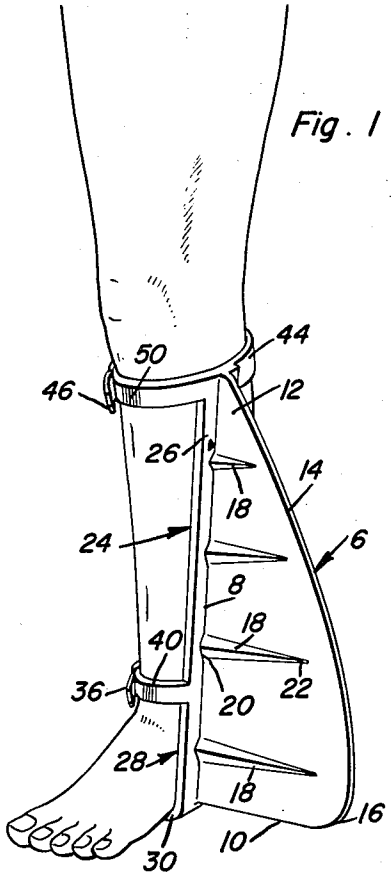


Fig. 1

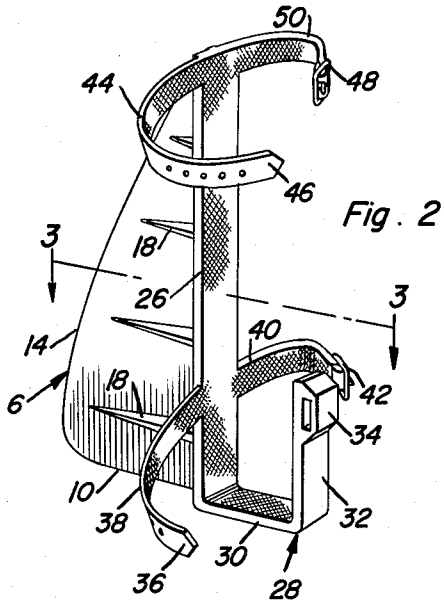


Fig. 2

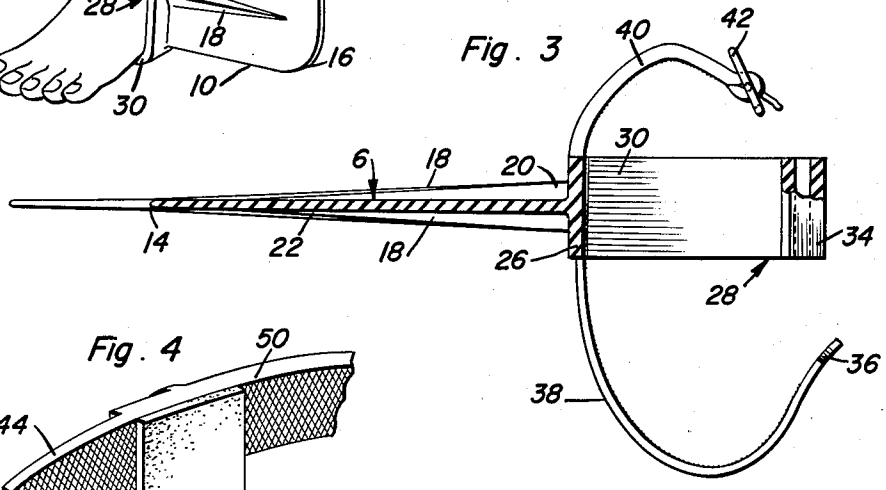


Fig. 3

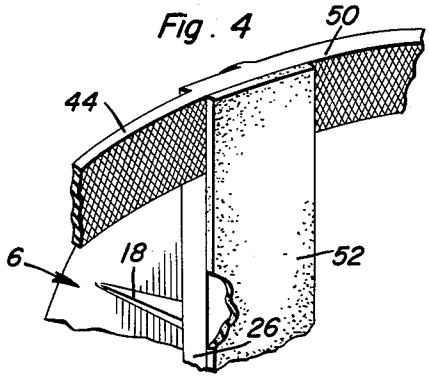


Fig. 4

Clifford M. Glenn

INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson

Attorneys

United States Patent Office

3,109,186

Patented Nov. 5, 1963

3,109,186

LEG FIN

Clifford M. Glenn, 725 Chiquite Road, Healdsburg, Calif.

Filed Apr. 6, 1962, Ser. No. 185,595
2 Claims. (Cl. 9—309)

This invention relates, generally categorized, to aquatic appliances such as swimming aids and accessories; and pertains, more particularly, to a novel leg-vane which when properly attached, functions as an effective propulsion fin and accordingly increases the effectiveness of the user's legs when in use.

Persons conversant with ready-to-use swimming aids of the body-attached type are aware that wings, fins and the like are being used for aquatic locomotion, for steering, balancing and other swim-along and propelling needs. These prior art adaptations and contrivances are constructed in various ways and are specially geared to their particular needs for stunt performances, for fun and frolicking, and for regular or ordinary swimming activities. With a view toward advancing the art the instant invention has to do with a unique adaptation analogous to but dissimilar from currently popular web-type foot fins. To this end vanes or fins are utilized. Each appliance, more specifically, is characterized by a substantially rigid fin, the latter provided with stirrup means whereby it may be reliably harnessed on the leg in a manner to extend lengthwise of the outer side of the leg at right angles to the plane of the shin bone and ranges from the sole of the foot to a point just below the knee. Thus located and securely but comfortably held the fin provides balance and is geared to the needs for increased speed without interfering with dexterity or maneuverability.

The appliance is simple, practical, economical, easy to apply and remove, is capable of optimum effectiveness for thrust and dependable propulsion and functions satisfactorily while swimming either on the surface of the water or beneath the surface and otherwise achieves the improved results for which it is designed and used.

Equipped with the herein disclosed fins, one on each leg, the user can maneuver his legs to launch out in any direction while at the same time obtaining steerable thrust and propulsion forces needed. The fin, when of the prerequisite size and shape shown affords the area and locomotion desired and adapts itself with requisite nicety to assure controlled effort and results in fast travel without hindrance and attending fatigue.

The preferred construction is that shown in the views of the drawing. Briefly, it comprises a longitudinal leg brace, a segmental vane or fin fixed thereto and projecting outwardly therefrom. The bottom of the brace is fashioned into a positioning and retaining stirrup which is strapped to the wearer's ankle. The top of the brace has a leg encircling strap buckled or otherwise held in place just below the knee. Optionally, the surfaces of the strap, brace and stirrup components are milled or faced with sponge rubber or the like to guard against slippage and to minimize the likelihood of undue rubbing and consequent chafing.

These together with other objects and advantages which will become subsequently apparent reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawing forming a part hereof, wherein like numerals refer to like parts throughout, and in which:

FIGURE 1 is a view in perspective showing the improved leg fin, how it is constructed and applied for use;

FIGURE 2 is a view in perspective of the leg fin by itself;

FIGURE 3 is an enlarged view in section and elevation taken on the horizontal line 3—3 of FIGURE 2; and

FIGURE 4 is an exaggerated fragmentary perspective view with parts in section and elevation showing a slight modification, a sponge rubber liner or facing for the brace.

With reference now to the figures of the drawing it will be evident that the appliance or attachment considered as a unit is preferably of one-piece construction and is molded from moldable commercial plastics of a suitable grade or appropriate rubber. The vane or fin is denoted by the numeral **6** and may be described as segmental in plan or elevation. It is of a length to extend from the sole of the foot of the wearer, as shown in FIGURE 1, to a place or point just below the knee. The inner or lengthwise edge (vertical in the views appearing in the drawing) is substantially straight as at **8**. The bottom edge **10** is straight across and at right angles to the edge **8**. The fin progressively decreases in width from the bottom **10** to the upper end portion **12** where it is relatively narrow. The free outer marginal edge or periphery **14** is curved and the corner **16** at the juncture of the edges **14** and **10** is rounded. This vane or fin is relatively rigid and for added stability tapering V-shaped reinforcing ribs **18** are provided. These ribs at the larger ends **20** extend from the edge **8** and the apical terminals **22** terminate inwardly or short of the marginal edge **14**. The ribs are opposite each other on opposite flat surfaces of the vane as is evident in FIG. 3. It is within the purview of the invention to mold or join the fins to leg portions of a skin diving suit (not shown). Also, these fins could be fastened to the legs of a diving suit by suction cup belts (not shown). These aspects of the overall concept are being mentioned here to provide a satisfactory foundation for and to render the descritpion aptly comprehensive in scope. However and in the preferred embodiment illustrated the novel swimming fin is reliably harnessed to the wearer's leg so that it projects outwardly therefrom as illustrated in FIG. 1. The harnessing means is integral with the edge **8** of the fin. Conversely, the edge **8** is integrated with and coextensive in length with the median lengthwise outer surface of a leg brace. This harnessing means is denoted as an entity by the numeral **24**. More specifically, it comprises a relatively rigid lengthwise leg brace **26** the lower or bottom portion of which is fashioned into a foot stirrup **28**. The stirrup comprises a horizontal portion **30** at right angles to the brace **26** and extends crosswise of the bottom or sole of a foot. The free terminal end is directed upwardly and at right angles to the part **30** as at **32** and is consequently parallel to the lower portion of the brace and the terminal thereof is fashioned into a suitable eye **34**. This eye serves to permit passage therethrough of the free end portion **36** of the ankle encircling strap means. This means comprises a relatively thin rear strap portion **38** and a somewhat heavier and thicker front strap portion **40** the latter provided with a buckle **42** to fasten the terminal end **36** in a self-evident manner. A similar leg-embracing or encircling strap is integral with the upper end of the brace and comprises a thin flexible rear strap portion **44** the terminal **46** of which is separably connectible with a buckle **48** on the free end of the heavier and thicker front strap **50**.

In actual practice the skin contacting surfaces of the ankle straps and leg strap and brace and stirrup portions may be cross-ribbed or otherwise correspondingly constructed to create suction for better gripping and retention results. Alternatively the strap surfaces may be thus constructed and the broader or wider surface of the brace **26** may be faced or lined with a ply or strip of sponge rubber as shown at **52** in FIG. 4.

It will be evident that the leg fins will be made in different sizes for men, women and children in keeping with the requirements of the manufacturer. Generally speaking the leg brace will be about one and one-half inches wide and one-quarter of an inch thick. The top and bottom front straps as suggested will be thicker in cross-section, that is compared to the rear straps, and curved or shaped to effectively fit the shin bone. The fin may be of some other shape than that shown, may be wider or longer and even extend from a plane below the bottom of the foot to increase efficiency.

Experience has shown that these leg fins eliminate ankle strain and consequently reduce fatigue to a minimum. The stirrups ensure proper maintenance of the fins yet promote freedom of movement of the feet. The fins when in use do not hinder walking and may be used with or without currently used foot fins (not shown).

It is also to be pointed out that the strap ends do not have to be joined by buckles. This is to say, snap fasteners or other quick separable fastening means may be substituted for the buckles (not shown).

The significant purpose of the stirrup is to secure the fins effectually to the foot so that in conjunction with the upstanding leg brace and leg encircling strap slippage and displacement is prevented.

It is believed that a careful consideration of the specification in conjunction with the claims and views in the drawing will enable the reader to obtain a clear and comprehensive understanding of the subject matter of the invention, the features and advantages derived from the use thereof and the best mode of applying and using the same. Therefore a more extensive description is believed to be unnecessary.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. An aquatic appliance expressly designed and adapted to aid a swimmer to launch himself into motion in a body of water and to thereafter propel himself, under water if so desired, said appliance comprising: a molded onepiece unit embodying a substantially rigid elongated bar-like member rectangular in transverse cross-section and constituting and providing a leg brace, said leg brace having a lengthwise inward flat surface which, when in use, resides firmly in contact with a lengthwise outward surface of the user's leg, said leg brace being provided at

a lower end portion thereof with a complemental portion extending at right angles therefrom and terminating at an inward end in an upstanding terminal portion which is opposed to and parallel with the cooperating lower portion of the brace, said portions cooperating with each other and said brace in defining a foot embracing and seating stirrup, a leg encircling strap having an intermediate portion thereof formed integrally with the extreme upper end of said brace, an ankle encircling strap having an intermediate portion thereof formed integrally with a portion of said brace which is adjacent to and cooperable with said stirrup, said ankle strap having connectible free end portions which are separably connectible with a terminal end of the aforementioned upstanding terminal portion, and a stationary leg fin comprising a vane which is susbtantially rigid and designed and adapted for vertical disposition and being of a length commensurate with the length of the brace and having a linearly straight inward lengthwise edge integrally fixed to a median portion of the lengthwise outer surface of said brace, said vane being segmental-shaped in front and rear elevation, having a lower end portion disposed at right angles to the plane of the brace and terminating in a plane generally the same as the plane of said stirrup complemental portion, said vane being wide at the median and bottom portions and sharply decreased in width to a minimal dimension at an upper end portion, said vane having flat front and rear surfaces provided with spaced parallel vertically spaced reinforcing ribs, said ribs having inward end portions thereof integrated with the outer surface of the brace at the point of connection of the brace with the inner edge portion of the vane, the outer ends of said ribs terminating short of and being spaced inwardly from an outer marginal edge of the vane.

2. The structure defined in claim 1 and wherein the upper end of said terminal portion is provided with an eye, said eye having a horizontal passage which is opposed to the point of attachment of the intermediate portion of said ankle strap with said brace and permitting the passage therethrough of a free end portion of said ankle strap.

References Cited in the file of this patent

UNITED STATES PATENTS

1,059,443	Cseki	Apr. 22, 1913
1,114,466	Goodenberger	Oct. 20, 1914
1,216,457	Jelalian	Feb. 20, 1917
2,620,495	Loiselle	Dec. 9, 1952
2,826,423	Erickson	Mar. 11, 1958
2,889,563	Lamb	June 9, 1959
2,894,270	Manthos	July 14, 1959
3,015,829	Gronkowski	Jan. 9, 1962