Jan. 26, 1971 S. L. MARGOLIES 3,557,397

SWIMMING DEVICE

Filed Dec. 12, 1966

Fig.1

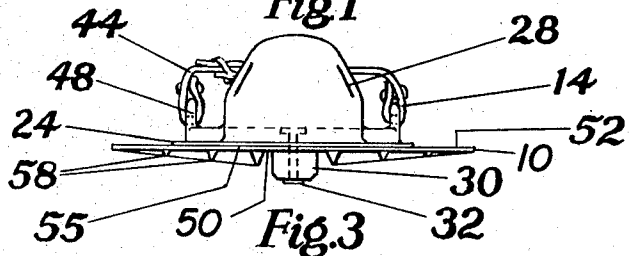


Fig.2

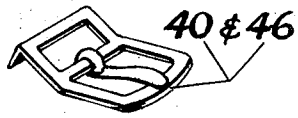


Fig.3

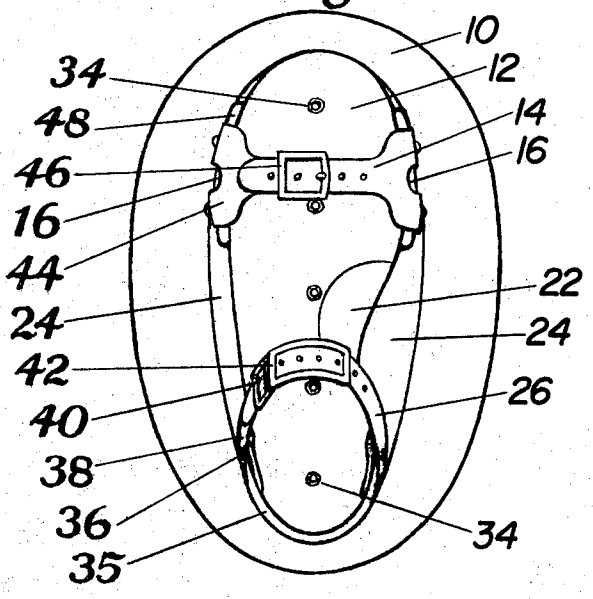


Fig.4

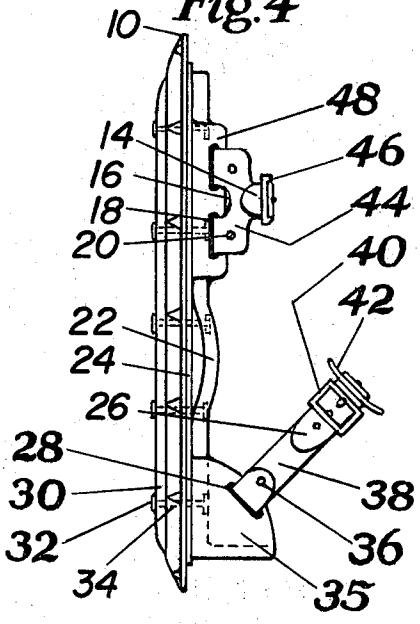


Fig.5

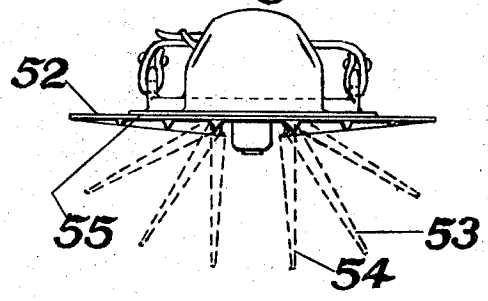


Fig.6

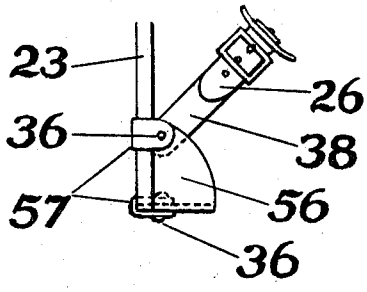
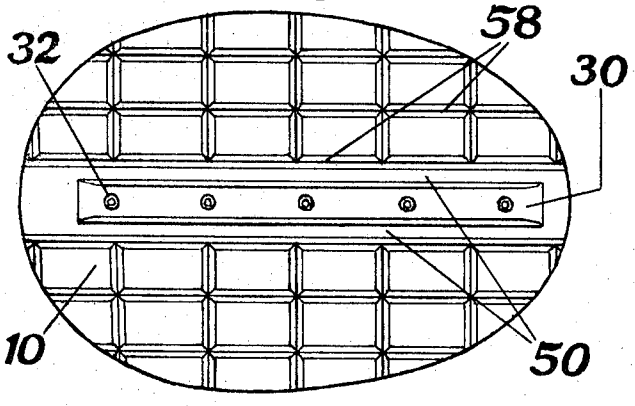


Fig.7



INVENTOR

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SWIMMING DEVICE

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ABSTRACT OF THE DISCLOSURE

A swimming device comprising a resilient fin which becomes rigid when moved in one direction against the water and which flexes to a non-rigid position when moved in the opposite direction.

This invention relates to a swimming device which can be used as a sport for swimmers, underwater uses such as aqua-lung and deep sea divers with greater ease and efficiency and as a life saving device.

At present, there are no devices on the market other than the fin type used by divers and it seems that this is their only use and purpose. It is quite evident that their effectiveness in aiding the diver to reach his objective at any greater speed isn't much improved than if they weren't used at all. Their use, as I see it, is due because they are recommended by instructors and this is only because there are no others available.

In the past, numberless persons have been drowned because rescue came a few moments too late and it would be useless to state that my invention is far better than others because there are no others for comparison.

One of the objects of my invention is to provide an efficient means of reaching swimmers by life guards at beaches when the swimmer gets into trouble or by one swimmer to reach another in quicker time.

Another object of my invention if for the pleasure of people using my device in games of sport and will be made in various sizes to fit the young of all ages, both male and female.

A further object of my invention is the facility with which aqua-lung divers reach their objective and perform underwater tasks with far greater ease and efficiency.

One of the features of my invention is that all the parts in this device are fabricated of materials impervious to salt water and every precautionary measure is taken as not to endanger the safety of the swimmer.

Another feature of my invention is the fact that the swimmer isn't compelled to take this device off his feet when getting out of the water but can walk without any difficulty right onto the sand, earth, or any other hard surface. The same applies when walking into the water.

A further feature of my invention is that it is a device of very simple construction, contains only one flexible part and no moving parts, is uniquely designed and engineered eliminating hinges as well as other means of mechanical propulsion and constructed to avoid tiring the user prematurely.

Still another feature of my invention is that the fins which cause the swimmer to be propelled through the water contain a deeply grooved or ribbed undersurface to retain the maximum amount of water for greater effectiveness and to prevent the fins from sliding and slipping in every direction in the water and thus become unmanageable with consequent loss of speed—the main object of this invention.

These and other objects and features obtained and my new results will be apparent from the device described in the following specifications, particularly pointed out in the attached claim, and illustrated in the accompanying drawing, in which:

FIG. 1 is the rear end elevational view of my invention with the rear straps and buckle omitted for clarity.

FIG. 2 is a perspective, greatly enlarged view of a new, specially designed buckle to prevent slippage of certain specific materials and to be used for both the front and rear straps.

FIG. 3 is a top or plan view of FIG. 1 of my invention.

FIG. 4 is a side elevational view of FIG. 3 of my invention.

FIG. 5 refers more particularly to FIG. 1 which is an identical view but showing the fins in a progressively open and closed position.

FIG. 6 shows the rear end section of FIG. 4 illustrating an example of the possibility of substituting various methods of construction pertaining to the molded heel and also to the upwardly projecting tabs or ears at the front of the device to which the front straps are attached.

FIG. 7 is the bottom view of the device showing the cross-hatched, ribbed projections of the undersurface.

Referring more particularly to the drawing, reference numeral **12** identifies a heavy piece of rigid plastic or other material formed to the contour of the human foot and containing two tabs or ears **48** projecting upwardly on both sides of the forward portion of the sole **12**, each projection containing two slotted openings **18** and another upward projection at the rear of the sole **12** for a heel support **35** also containing two slotted or elongated openings **28**; and also on the upper surface of sole **12** is a convex projection **22** for support of the arch of the foot. The two front upward projections **48**, the heel support **35** and the arch support **22** can be molded in one integral part. Each of the front straps **14** and **44** are divided into two parts or two anchors separated by opening **16** for double security for the safety of the user; inserted into openings **18**, turned upward and the ends are securely riveted **20** to the strap; the rear straps **26** and **38** are secured in the same manner with rivet **36**, and the ankle protector **42** is inserted into the rear tongue strap **26** before connecting with buckle **40**. Beneath the sole **12** is a thin, elliptical and flexible sheet of plastic, rubber or other pliable material, fin **10**, much larger in dimensions than the sole **12** and is flat and smooth on the upper surface but contains a ribbed, cross-hatched undersurface **58**, and between the fin **10** and the sole **12** is a somewhat smaller piece of oval shaped material **24**, and beneath these three parts is reinforcing bar **30** which is a heavy strip of rigid plastic or metal and which supports and secures the three previously mentioned parts with rivets passing through all the parts with the riveted or expanded ends **32** of the rivets **34** visible on the underside of bar or strip **30**.

To accomplish the purpose of this invention, the device is strapped to the feet of the swimmer and in the water, he simply moves his feet backward and forward. The normal position of the fins **10** is on a level or straight horizontal plane, parallel and touching fin supports **24**, the upper face **52** of the fins **10** contacting the lower surface **55** of the fin supports **24**, thus, with the fins in an open, horizontal position, it permits the user to walk while wearing the device in and out of the water, the reinforcing bar **30** and the projecting ridges of webbing **58** on the undersurface of the fin **10** contacting the ground.

With a slight forward pull of the feet in the water, the fins **10** pivoting at location **50** are pulled away from the fin supports **24** to position **53**. With a more forceful pull of the feet, the fins are drawn to position **54** as shown in FIG. 5 thus reducing the resistance in the water as the feet are drawn forward again. The instant the feet are poised for another backward, forceful push, the fins return instantly to their normal position with upper surface **52** of the fins **10** are supported by the lower surface **55** of the fin supports **24**. Thus, the repeated forward and backward movement of the feet projects the swimmer quickly

in the water, the projections of the ribbed undersurface **58** retains the maximum amount of water as the foot is thrust backward which provides a more positive and firm control of the fins, preventing the fins from becoming unmanageable by slipping and sliding uncontrollably in the water.

I have thus described my invention but I desire it understood that it is not confined to the particular forms or usage shown and described, the same being merely illustrative and that the invention may be carried out in other ways without departing from the spirit of my invention and therefore, I claim broadly the right to employ all equivalent instrumentalities coming within the scope of the appended claims, and by means of which, objects of my invention are attained and new results accomplished as it is obvious that the particular embodiments herein shown and described are only some of the many that can be employed to attain these objects and accomplish these results.

As an example of this variance, the molded sole **12** with the upwardly projecting ears **48** and molded heel support **35** can be substituted by a flat piece of material, also rigid or of metal and instead of the projecting ears and heel, elongated or slotted openings in the flat material can be provided for inserting the strap ends and securing them with rivets as shown in FIG. 6, the flat piece **56** bent to the curve of the rear end of the sole **12** for the heel support and secured to the sole **23** with U shaped straps **57** and the end of the buckle strap **38** provided with rivets **36**.

Another example, reinforcing bar **30**, being a separate strip of rigid material can be molded at the same time and in the same mold with, and thus becomes an integral part of, fin **10**.

A further example of the method of construction of my invention without departing from the spirit of my invention; the fin support **24**, a separate part as shown in the drawing, can be molded at the same time and in the same mold of sole **12** and thus becoming an integral part of the sole.

I claim:

1. A swimming device comprising

(a) a fin including a thin, elliptical, resilient sheet,

(b) a fin support of elliptical shaped rigid material smaller in size than said fin and disposed above said fin,

(c) a sole mounted on said support,

(d) upwardly projecting ears on said sole having slots therein,

(e) a heel support on said sole having slots,

(f) front and rear straps passing through said slots for fastening to the foot,

(g) an elongated bar beneath said fin narrower than said support and secured to said fin, fin support and sole,

(h) the elongated edges of said bar providing lines of flexure of said fin in one direction,

(i) said support limiting movement in the other direction, and

(j) said fin having ribs on its surface opposite the surface engaged by the fin support.

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