Feb. 25, 1969 J. F. NEWTON 3,428,980

SWIMMING EQUIPMENT

Filed Dec. 30, 1966

Fig. 1.

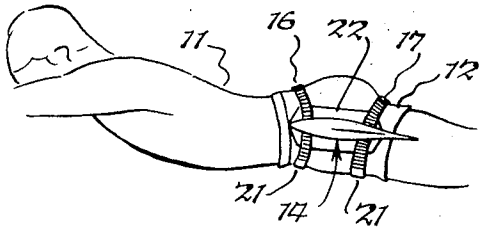



Fig. 3.

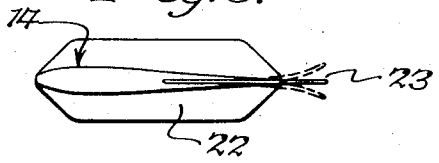



Fig. 2.

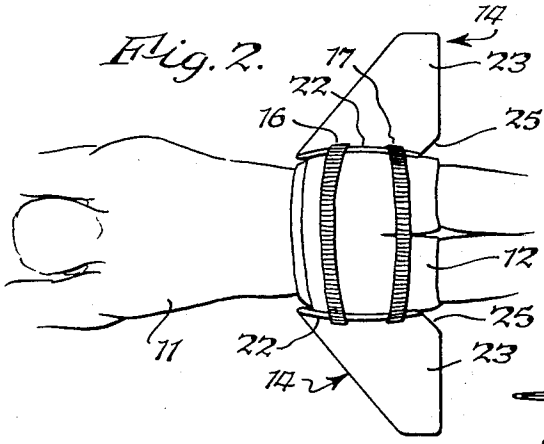



Fig. 4.

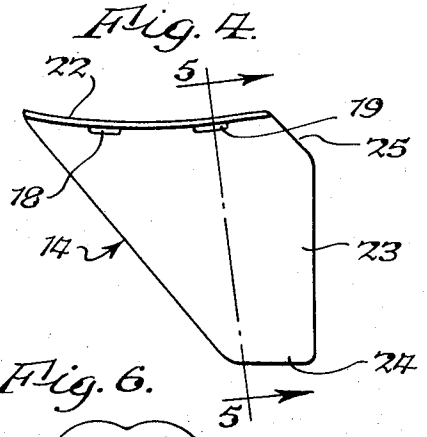



Fig. 6.

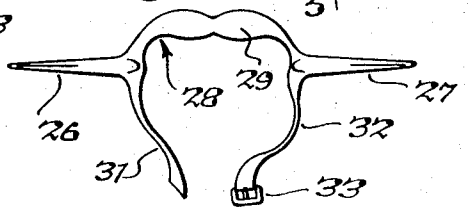



Fig. 8.

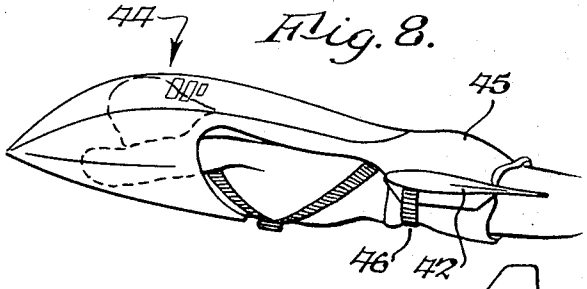



Fig. 9.

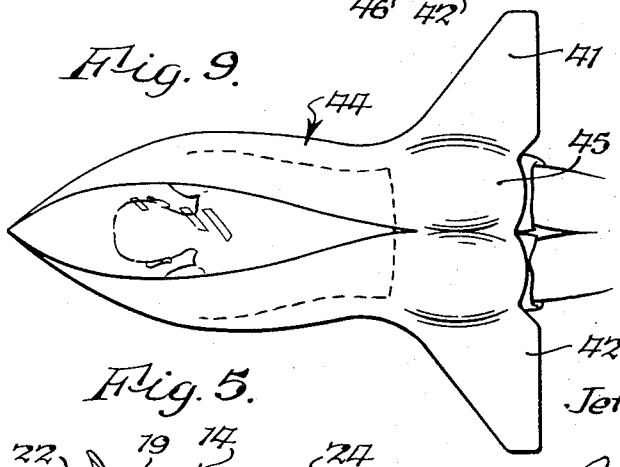



Fig. 5.

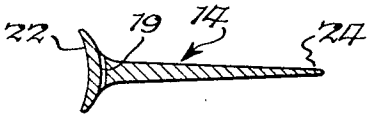
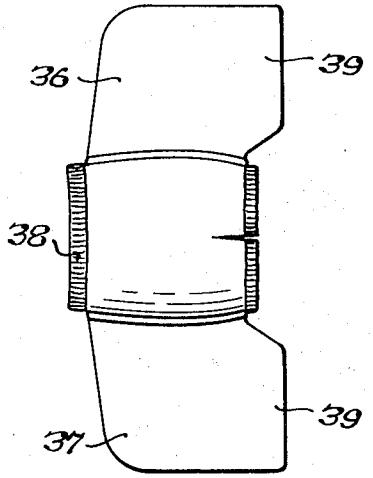



Fig. 7.




INVENTOR.

Jefferson F. Newton

BY

Ashlan F. Harlan Jr.

ATTORNEY.

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# SWIMMING EQUIPMENT

Jefferson F. Newton, 1640 Dodge Road,
East Amherst, N.Y. 14051

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Int. Cl. B63c 9/08; A63b 31/00

## ABSTRACT OF THE DISCLOSURE

It is disclosed that the efficiency of a swimmer, particularly when he is using the so-called "porpoise kick," may be increased by the use, either as an attachment or as part of a garment or other body-encasing equipment, of a pair of stabilizing fins extending laterally from the body. The fins are located symmetrically at approximately the position of the swimmer's hips and, while the main portion of each fin is substantially rigid, the trailing edges are flexible.

### *Background of the invention*

This invention relates to swimming equipment and is particularly concerned with devices for increasing the efficiency of swimmers.

In swimming, one of the more useful movements is the so-called "porpoise kick" in which, while the swimmer is prone in the water, the feet and legs are moved up and down from the hips in unison. This results, particularly when the swimmer is wearing flippers which provide great leverage, in a tendency for the swimmer's midsection to move up and down so that the propulsive effect of the kicking is diminished.

### *Summary of the invention*

It is primarily the object of the present invention to provide devices to be worn by swimmers which will increase their efficiency while using the so-called "propoise kick."

By the present invention means is provided for restraining the up and down movement of the swimmer's midsection, thus stabilizing the body and permitting the full effect of the "porpoise kicking" to be converted into propulsive effort. Such means although it may exist in a number of different embodiments, essentially comprises laterally extending fins located at or adjacent to the swimmer's hips and placed symmetrically with respect to the swimmer's body.

### *Brief description of the drawing*

FIGURE 1 is a partial side elevation view of a swimmer wearing fins according to one embodiment of the present invention;

FIGURE 2 is a partial top plan view of the swimmer and fins shown in FIGURE 1;

FIGURE 3 is an enlarged side elevation of one of the fins shown in FIGURES 1 and 2;

FIGURE 4 is a plan view of the fin shown in FIGURE 3;

FIGURE 5 is a sectional view on line 5—5 of FIGURE 4;

FIGURE 6 is a front elevation of a modified form of fins and means for securing them on a swimmer;

FIGURE 7 is a top plan view showing another modified form of fins combined with a garment;

FIGURE 8 is a partial side elevation showing fins according to the invention incorporated in a swimming shell; and

FIGURE 9 is a partial plan view of the construction illustrated in FIGURE 8.

### *Description of preferred embodiments*

A preferred embodiment of the invention is illustrated



in FIGURES 1–5, inclusive, of the accompanying drawings. Referring to FIGURES 1 and 2, the reference numeral **11** designates the body of a swimmer wearing trunks **12** over which there is secured a pair of fins **14** which preferably are identical. The fins **14** are held around the body **11** by a pair of straps **16** and **17** which encircle the body, passing through slots **18** and **19**, respectively (see FIGURE 4), in each of the fins and are fastened by suitable means such, for example, as buckles **21** so as to hold the fins snugly to the body at the swimmer's hips.

As more clearly shown in FIGURES 3 and 4, each of the fins **14** is generally triangular in shape and is provided with a base **22** normal to the edge of the fin adjacent the body **11**. The base **22** extends longitudinally of the swimmer's body when the fin is in place for use and is preferably curved to follow the body contours. The slots **18** and **19**, referred to above, are formed in the fin adjacent the base **22** and longitudinally spaced.

The fins may be formed of various materials. Among those suitable are rubber, various plastic materials, for example, polyvinyl cholride, or polyethylene, including if desired reinforcing materials such as fibers or fabrics, for example, and even wood or metal. Preferably, as shown, the leading edge of the fin is rounded to reduce resistance in moving through the water and the thickness of the fin diminishes toward both the trailing edge **23** and the outside edge **24**. As shown in FIGURES 2 and 4, the trailing edges **23** of the fins preferably project beyond the lower ends of the bases **22** and are cut away, as at **25**, at the ends thereof adjacent the body **11** to avoid interfering with movement of the swimmer's legs.

While the main body of the fin should have a considerable rigidity, it is desirable for the trailing edge portion to be flexible, as indicated in FIGURE 3. This flexibility may be obtained, with some materials such as rubber or certain plastic materials merely by forming the trailing edge sufficiently thin. In other cases, it may be desirable to employ a composite structure with the trailing edge of a material different from the main body of the fin. Depending upon the material used and other factors, the fins may, if desired, be partially or wholly hollow. The molding or other formation of the fins in the manner described is obviously within the skill of those working with materials of the types described.

FIGURE 6 illustrates a modified construction providing fins which have the same utility as the fins described above and operate in the same way. In this construction, the fins **26** and **27** are carried by a harness **28**. The harness comprises a form-fitting shell **29** designed to fit over the buttocks of the swimmer and fastening means such as the straps **31** and **32** and the buckle **33** for securing the harness around the body of the swimmer so that the fins do not shift location in use. The shell may be formed of suitable material such as light metal or a molded plastic, which may be reinforced if desired and also can, if desired, extend upwardly along the back of the swimmer thus providing additional stability. The fins **26** and **27** may be formed integrally with the harness **28**, or formed separately and secured thereto in any convenient and suitable manner. The shape of the fins is not critical and they may be generally triangular as in FIGURES 1–5, inclusive, or oblong as in FIGURE 7.

Another possible modified form of the invention is illustrated in FIGURE 7. In this modification, the fins **36** and **37** are carried by the swimming trunks **38** to which they can be attached by suitable means not shown, for example, by riveting or stapling, or by a waterproof adhesive. The fins **36** and **37** in this embodiment are generally oblong in shape as shown, although this is a matter of choice. However, in this embodiment as also in that illustrated in FIGURE 6, the fiins are streamlined to reduce resistance in forward movement and have flexible trailing

edges 39. In general, except for the shape, the construction of fins 36 and 37 may be substantially the same as that of the fins 14. It will be understood that instead of the trunks 38 any other type of swimming garment may be used as a support for the fins 36 and 37 provided it fits the swimmer snugly enough so that the fins remain in the desired location adjacent the hips of the swimmer and provides sufficient support for the fins to prevent them from flapping. It will be observed that in the several embodiments of the invention heretofore described the fins are of limited length. They extend along the body in the area between the waist and the knees of the swimmer only and the securing means for the fins contacts the body of the swimmer adjacent the hips only.

FIGURES 8 and 9 illustrate still another embodiment of the invention in which the fins 41 and 42 preferably are formed integrally with an artificial shell or carapace 44 intended to be worn by the swimmer to streamline and/or protect him and his equipment. The general design of the carapace 44 is not critical to the present invention and may vary as desired. It is, however, provided over the buttocks with a portion 45 similar to the shell 29 carrying the laterally extending fins 41 and 42 and with means, such as a strap or belt 46, holding the portion 45 firmly against the body of the swimmer. Although the fins 41 and 42 are shown as triangular in shape, the shape is a matter of choice. However, as in the case of the other embodiments, the fins are preferably streamlined in section and the trailing edges are flexible. The carapace 44 may be of any desired material, although it should be provided with a suitable transparent portion so located as to allow an adequate field of view for the wearer. The fins 41 and 42 may, if convenient, either be formed integrally with the carapace or be suitably secured thereto. The fins, as pointed out above, may be of any suitable material, design, and construction.

Although, as described above, the invention may exist in a number of embodiments and may be modified in many particulars, in all embdoiments and modifications the principle of operation is the same. The tendency, referred to above, for the midsection of a swimmer's body to move up and down when the swimmer is employing the "porpoise kick" is resisted, when the swimmer is wearing fins according to the present invention, by the pressure of the water against the relatively large area of fin surface. The swimmer is thus stabilized and movement of the swimmer through the water is aided. Because of their flexible trailing edges, the fins further increase the efficiency of the swimmer since the swinging movement of such edges as indicated in FIGURE 3, as the fins alternately push upwardly and downwardly against the water, provides additional thrust through the water. In this connection, it will be understood that the size of the fins according to the invention may vary as desired.

It will also be understood that other modifications of and variations from the structures shown and described may be made without departing from the spirit of the present invention.



I claim:

1. A swimming aid comprising a pair of stabilizing fins of such length as to extend along the body of a swimmer in the area between the waist and the knees only and means contacting said body adjacent the hips only for securing said fins in laterally extending, nonflapping, symmetrical position on said body at approximately the position of the hips, whereby said fins restrain up and down movement in the water of the midsection of the body.

2. A swimming aid as set forth in claim 1 in which said fiins are provided with flexible trailing edges.

3. A swimming aid as set forth in claim 2 in which the main portions of said fins are substantially rigid.

4. A swimming aid as set forth in claim 2 in which said fins are generally triangular in shape.

5. A swimming aid as set forth in claim 2 in which said fins are generally oblong in shape.

6. A swimming aid as set forth in claim 2 in which said fins are so mounted as to prevent their shifting longitudinally on the body of a swimmer.

7. A swimming aid as set forth in claim 2 in which said fins are carried by a swimming garment.

8. A swimming aid as set forth in claim 2 in which said fiins are tapered toward their trailing and side edges.

9. A swimming aid as set forth in claim 2 in which said fins are integrally formed with means to be worn by a swimmer.

10. A swimming aid as set forth in claim 2 in which said fins are carried by a streamlined carapace adapted to be worn by a swimmer.

11. A swimming aid as set forth in claim 1 in which the main portions of said fins are substantially rigid.

12. A swimming aid as set forth in claim 1 in which said means includes portions following body contours.


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MILTON BUCHLER, *Primary Examiner.*

T. W. BUCKMAN, *Assistant Examiner.*

U.S. Cl. X.R.

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