March 2, 1943. E. F. PELS 2,312,976

PROPELLING DEVICE

Filed Oct. 6, 1941

Fig. 1.

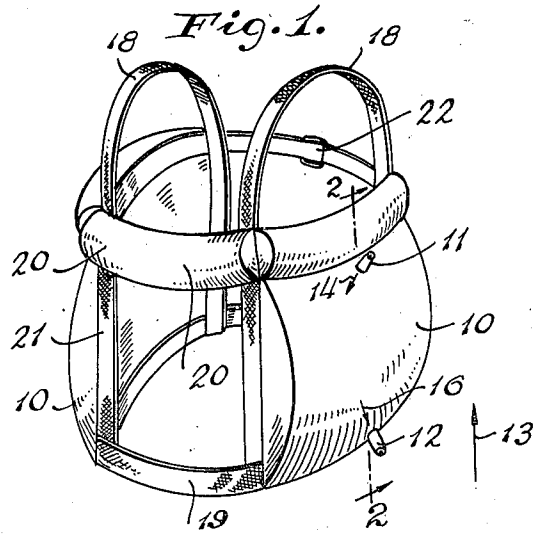


Fig. 2.

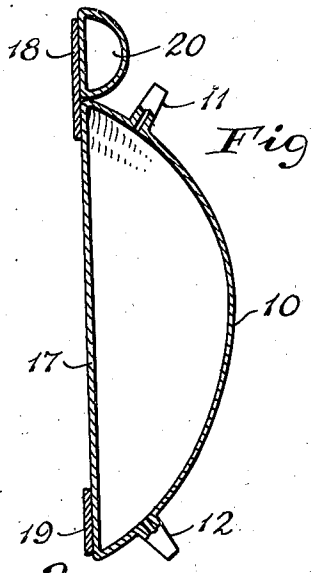


Fig. 3.

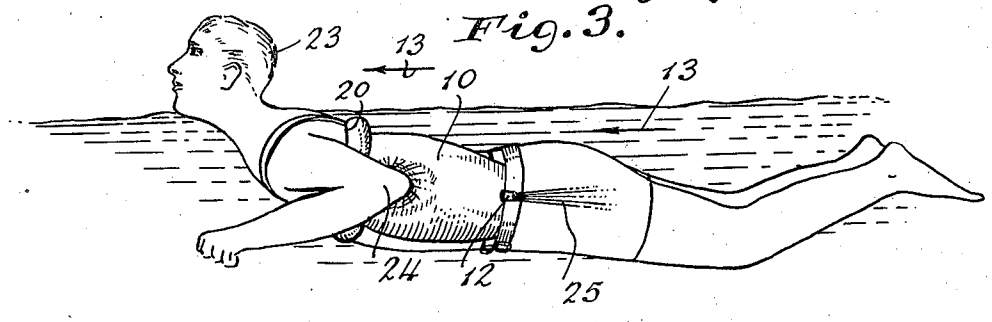


Fig. 4.

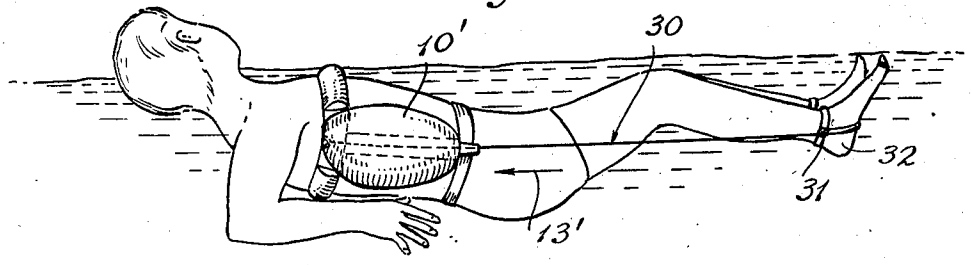
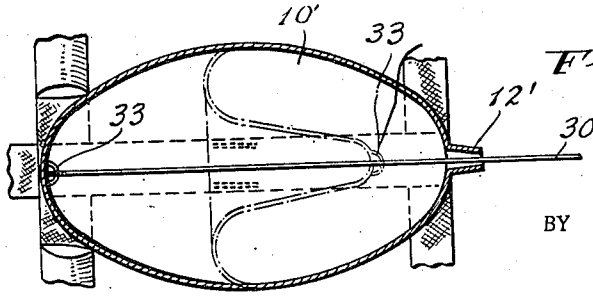


Fig. 5.



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PROPELLING DEVICE

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5 Claims. (Cl. 9—18)

The present invention relates to a propelling device and it particularly relates to a propelling device to be used by persons floating or swimming in water.

It is among the objects of the present invention to provide an improved attachment which may be readily mounted upon the human body and adjusted to size or shape desired, and which may be used by persons swimming or floating for propulsion purposes or to permit more ready movement.

Another object is to provide a swimming attachment which will enable inexpert swimmers to move more rapidly in water and enable beginners and learners to float or swim more readily.

Another object is to provide a device to be utilized by people in aquatic sports which can be used as a means of playing water sports or water games and which will require different types of skill and permit of different types of movements and speeds than are ordinarily possible with use of the hands and feet alone.

Other objects and advantages will appear from the more detailed description set forth below, it being understood, however, that this more detailed description is given by way of illustration since various changes therein may be made by those skilled in the art without departing from the scope and spirit of the invention.

In accomplishing the above objects it has been found most satisfactory according to one embodiment of the present invention to provide a collapsible chamber or container about the person of the swimmer, which may cause water to be propelled in a desired direction and by the reaction of such propulsion cause a swimmer to move.

Although the collapsible containers may be positioned between the legs or under the arm pits, or on the front or back of the body so that the water expelled therefrom will give the desired reaction and propulsion it has been found that a movement of the elbows toward the body is much more effective in causing the expulsion of the water and propelling reaction.

Therefore, it has been found preferable to position the containers at the sides of the body under the arms rather than on the front or back of the body where it can be pressed by the hands.

It has also been found that the container is much more desirably positioned on the upper part of the body than on the legs or the outside of the legs, or adjacent the hips or lower portion of the body.

If desired, however, small or large collapsible containers may be positioned at the various places on the body whether along the sides, under the arms, on the front or back of the lower part of the body, or along the thighs, and if desired the containers may be of the type which may be also used to hold air or a certain proportion of air to give buoyancy in the case of inexpert swimmers or learners.

Also, if desired, the container may be held in fixed position, or held along the waist of the person indulging in aquatic sports, or the containers may be made adjustable, so that the said containers may be adjusted to the balance, size and shape of the body of the person.

The above and other objects will appear more clearly from the following detailed description when taken in connection with the accompanying drawing and will illustrate a preferred embodiment of the invention.

In the drawing:

Fig. 1 is a side perspective view of one form of swimming device according to the present invention.

Fig. 2 is a transverse sectional view upon the line 2—2 of Fig. 1, upon an enlarged scale as compared to Fig. 2.

Fig. 3 is a side diagrammatic perspective view showing the position of the devices of Figs. 1 and 2 upon the body of a user, floating or swimming in water.

Fig. 4 and Fig. 5 show alternative constructions where the device may be collapsed by the user although it is positioned adjacent the arms. Fig. 4 being a side elevational view of the swimmer or floater with the device attached to his body and in use, and Fig. 5 being a side elevational view of the collapsible container of Fig. 4 upon an enlarged scale as compared with Fig. 4.

Referring to the embodiments of Figs. 1 to 3, the device is provided with a collapsible set of containers 10, shown as being two in number, but which may be less or more, having the inlet connections 11 and 12.

In the preferred construction the device 12 consists of an outlet valve which permits flow outlet but does not permit inward flow, and when pressure is applied to the containers 10 water will be ejected through the outlet 12 resulting in propulsion in an opposite direction as indicated by the arrow 13.

The device 11, on the other hand, will permit flow into the chamber as indicated by the arrow 14 to fill the chamber and such chamber may normally tend to expand after pressure has been released therefrom.

As a result, when the collapsible chamber or container 10 is pressed against the body, the water therein will be forced out through the outlet 12 while the check valve in the inlet 11 will be closed.

Upon release and expansion of the chamber 10, the check valve in the outlet 12 will be automatically closed while the valve 11 will be open permitting inflow of water to fill the chamber again.

Although the chambers 10—10 may be of various materials they are most satisfactorily made of rubber, and if the rubber does not have sufficient resiliency to restore it to its shape, springs may be inserted, either flat or coil springs, molded in or with the rubber or positioned in the chamber, preferably suitably rustproof or made of rustless metals to cause the chamber to expand when pressure has been released.

These chambers 10 may be positioned at various points about the body and may be held adjustably or fixedly upon the belt or straps.

In the forms shown in Figs. 1 and 2 the inside faces 17 of the chamber 10 are attached by welding or riveting, or in some other water-tight or fluid-tight fashion to the straps 18 and 19, which may expand entirely around the body of the user as indicated in Fig. 3.

The upper or lower straps 18 and 19 may carry extra containers, such as indicated at 20, which may be filled with air for buoyancy purposes, and if desired the chambers 10 may also be so arranged that they will always contain a proportion of air in addition to the water, which is caused to flow thereinto upon release of pressure upon the inlet 11 and outwardly upon application of outside pressure through the outlet 12.

The straps 18 and 19 as well as the containers 20 are held in their relative positions by straps 21 which are connected to the rear faces 17 of the collapsible containers 10. The adjustments 22 enable attachment of the various straps in and about the device. These straps may be of a waterproof fabric or of rubber or resinous materials.

In operation, referring to Fig. 3, at the rear of the stroke, when the arms are drawing rearwardly the swimmer 23 may press with his elbows 24 against the collapsible chambers 10 propelling the water, as indicated at 25, rearwardly and propelling himself forwardly in the direction 13.

As soon as the elbows 24 are removed from the containers 10 the chambers 10 will spring back in place, drawing water through the inlets 11.

This operation can be continued indefinitely propelling the user of the device at great speed through water, and it may be utilized either to accustom the person to the water or aid in swimming instructions.

The various straps 18, 19 and 20, of course, may be adjustable and may carry additional collapsible containers than those shown.

In the alternative construction of Figs. 4 and 5, the corresponding parts are indicated by the same numerals in Figs. 1 to 3 however primed.

The collapsible container 10' is caused to collapse by an actuating connection 30 connected at 31 to the foot or strap around the foot 32 of the swimmer.

Extension of the leg, as shown in Fig. 4 will result in compression or collapse of the container 10', with the ejection of water and propulsion of the swimmer in the direction 13'.

Contraction of the leg on the other hand will result in the collapsible chamber 10' being filled with water through the inlet, which in the instance shown is indicated at 12' and may be the same outlet. The strap or actuating connection 30 may be attached to the container 10' by the ear 33.

It is thus apparent that the present applicant has provided an improved floating or swimming, or propulsion device to be placed upon the body and readily manipulated by persons in aquatic sports or games, or actually in swimming instruction. The device may be made of rubber and is relatively lightweight and inexpensive, and may be used in games or for amusement in connection with water sports.

The various containers should so be positioned about the body to enable effective application of the body members or connections therefrom to collapse or open the containers.

It is also apparent the specific illustrations shown above have been given by way of illustration and not by way of limitation, and that the structures above described are subject to wide variation and modification without departing from the scope of the invention, all of which variations and modifications are to be included within the scope of the present invention.

What is claimed is:

1. A swimming and propelling device comprising at least one deflatable container, means for admitting water into said container, means for discharging water from said container into a predetermined direction and means for securing said container to the body of a wearer.

2. A swimming and propelling device comprising at least one deflatable container, an inlet valve for admitting water into said container provided on said container, an outlet valve for ejecting a stream of water from said container provided on said container and means for securing said container to the body of a wearer.

3. A swimming and propelling device comprising at least one deflatable container made of flexible material, an inlet valve for aspirating water into said container while said container is expanding, an outlet valve for ejecting a stream of water from said container while said container is being deflated, said valves being attached to said container, and a harness for securing said container to the body of a wearer.

4. A swimming and propelling device comprising at least one deflatable container made of flexible material, means for restoring said container from a deflated position into an inflated position, an inlet valve for aspirating water into said container while said container is expanding, an outlet valve for ejecting a stream of water from said container while said container is being deflated, said valves being attached to said container, and a harness for securing said container to the body of a wearer in a position in which said stream of water is ejected into a direction substantially opposite to the intended direction of propulsion.

5. A swimming and propelling device comprising at least one deflatable container made of flexible material, an inlet valve for aspirating water into said container while said container is expanding, an outlet valve for ejecting a stream of water from said container while said container is being deflated, said valves being attached to said container, and a harness for securing said container to the body of a wearer in a position in which said stream of water is ejected into a direction substantially opposite to the intended direction of propulsion, a string fastened with one end to said container and adapted to be fastened with its other end to the body of the wearer for deflating said container by body movements and means for restoring said container from its deflated position into its inflated position.

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