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SWIMMING AID

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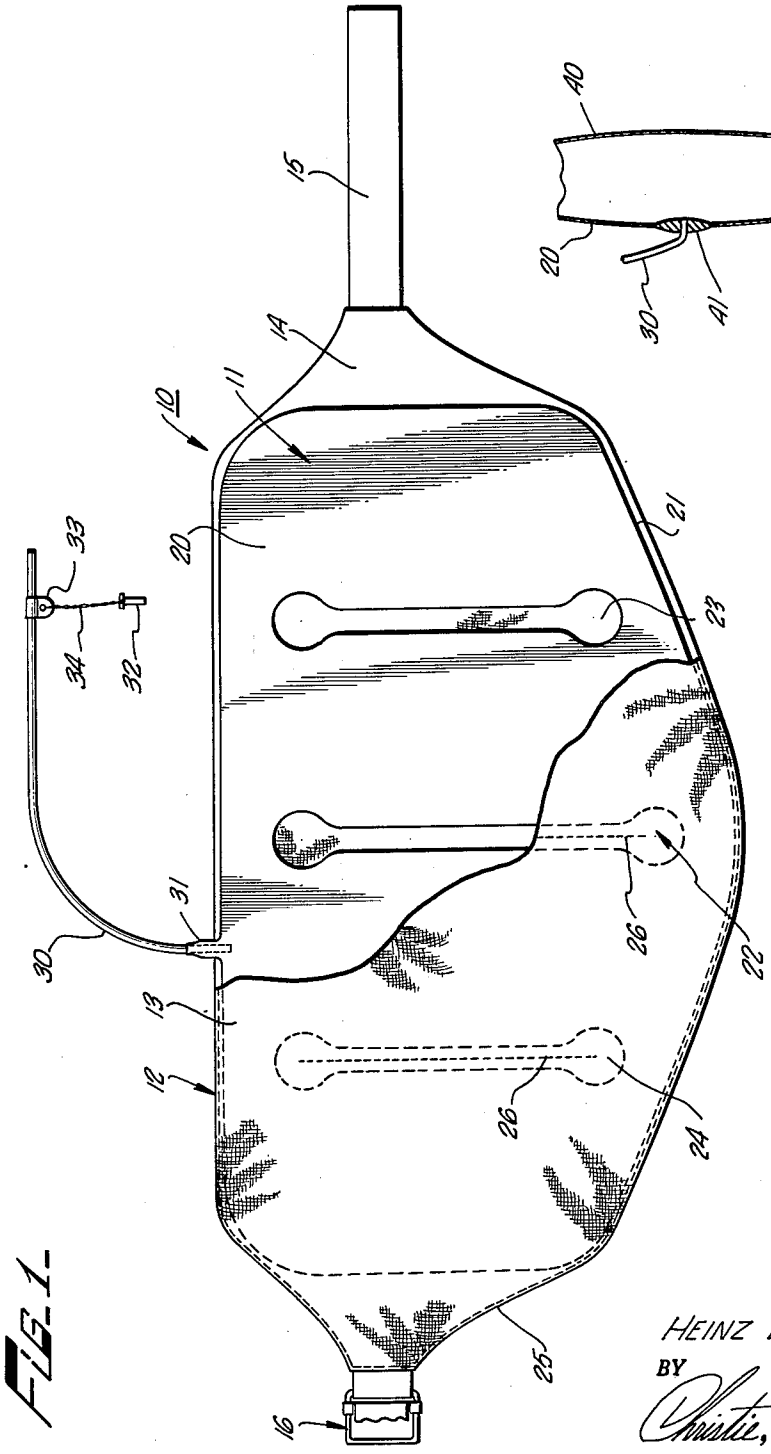


FIG. 1.

FIG. 2.

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SWIMMING AID

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This invention relates to swimming aids of the inflatable belt type which are utilized to assist the wearer in remaining afloat so as to facilitate swimming.

A problem commonly encountered by beginning swimmers and adult non-swimmers is a fear of becoming completely immersed in the water during swimming, and a corresponding fear of drowning. While this fear is quite widespread among these classes of swimmers, it results in embarrassment to the swimmer, since he cannot participate in aquatic sports with his companions. Various devices have been developed to assist the non-swimmer or beginning swimmer to remain afloat so as to overcome this fear. Many of these devices, however, have been quite apparent when in use, and, so while overcoming the embarrassment of the fear of the water, cause embarrassment from the obvious use of such a swimming aid. Further, many devices of this type have not been practical, since they have been extremely bulky and awkward, so as to be life preservers rather than swimming aids and so inhibit rather than aid the user in learning to swim. In many cases, this increased difficulty in learning to swim only results in an increased fear of the water.

According to the present invention, a swimming aid, which is substantially invisible when worn by the user on land, is adapted to be inflated by the user when in the water, the expansion of the aid then being hidden by the water. Such a swimming aid consists of an inflatable enclosure divided into four sections which are generally rectangular in configuration and are joined together on either end by fluid passages. These fluid passages insure a rapid and equal distribution of the inflating fluid, commonly air, throughout the inflatable enclosure when in use. The inflatable enclosure is enclosed in a textile covering which has a belt and buckle so as to enable the device to be buckled around the waist of the user. In use, the device is worn by the user under the bathing suit, and inflation is accomplished when in the water by means of a flexible inflating tube which may, for example, be of a vinyl chloride composition. One end of the flexible inflating tube extends into the inflatable enclosure. The tube is of a length such that, when the swimming aid is worn, the user may easily blow into its open end to inflate the device. The end utilized for inflating has a stopper, in the preferred embodiment, which is utilized to contain the inflating air in the enclosure during use.

The invention may be more readily understood by referring to the accompanying drawing in which:

FIGURE 1 is a plan view partially broken away of the preferred embodiment of the invention, and,

FIGURE 2 is a sectional view of an alternate embodiment of the invention illustrating an alternate method for securing the inflating tube to the enclosure.

Referring now to the drawing, in FIG. 1, a swimming aid **10**, according to the invention, includes an inflatable enclosure **11**, shown in its deflated condition, which is enclosed by a textile covering **12**, the outer portion **13** of which is shown as partially broken away. The inner portion **14** is shown as disposed beneath the inflatable member **11**. A belt **15** extends from one end of the textile covering **12** and a buckle **16** is attached to its opposite end.

The inflatable enclosure **11** consists of an outer impervious member **20** and an inner impervious member (not shown, see FIG. 2) which form the two sides of the enclosure. The outer and inner members are of an elongated pentagonal configuration so as to be co-extensive, and are sealed together at the peripheral edges thereof so as to form the sealed enclosure. The two body members are of a film-like thickness so as to permit facile sealing together thereof along the edges of the apertures. The sealed enclosure has a major aperture **22**, a portion of which is indicated by dotted lines as extending under the outer textile cover **13**, and a pair of minor apertures **23** and **24**, one of which is illustrated in dotted lines as being disposed under the outer textile covering **13**. It will be noted that the inner textile covering **14** and the outer textile covering **13** are sewn together with peripheral stitching **25**. Aperture stitching **26** in each of the apertures **22**, **23**, and **24** (the stitching in the aperture **23** not being shown inasmuch as the textile covering **13** has been broken away) assists in holding the device together in a comparatively flat, body-fitting form when inflated, so as to provide a minimum frictional resistance and visibility.

The major aperture **22** is disposed so as to extend through the enclosure transversely across the central portion thereof, thus dividing the enclosure into two substantially equal portions. The minor apertures **23** and **24** are symmetrically disposed, one to either side of the major aperture **22**, so as to further divide these two major portions each into two additional portions of substantially equal width. The apertures **22**, **23** and **24** are long and narrow, and in the preferred embodiment illustrated in FIG. 1, terminate at either end in a circular portion of greater diameter than the width of the central aperture portion. The use of the circular termination configuration for the apertures provides a structure which may be readily sealed without risk of tearing during use.

It will be noted that each of the apertures **22**, **23** and **24** is disposed within the enclosure **11** so as to terminate short of the closed sealed peripheral edges thereof, thus providing a fluid passage at either end of each aperture between adjacent inflatable portions of the enclosure. It is essential in the practice of the invention to provide fluid passages at both ends of the aperture in order to insure a ready distribution of the inflating fluid throughout the enclosure upon inflation. Further, such a structure is essential in order to permit the rapid deflection of the enclosure when the user emerges from the water, so as to not subject the wearer to the embarrassment of having a pronounced bulging about the waist which is visible when not in the water. Thus, the use of these connecting passages at either end of the aperture insures that the inflatable portions will remain adjacent the wearer's body and not extend horizontally outward therefrom when out of the water, otherwise excessive bulging of the wearer's bathing suit would result.

An inflating tube **30** extends into the inflatable enclosure **11** through the textile covering **12** and is held in position both by sealing by an adhesive such as rubber cement or plastic glue and by an extensible band **31**. The inflating tube has a stopper **32** attached thereto by means of a clamp **33** and cord **34**. This stopper **32** is inserted in the end of the inflating tube **30** after inflation to retain the inflating fluid within the enclosure. Upon completion of use, the stopper **32** and the inflating fluid is allowed to escape from the enclosure while the wearer is still in the water but standing on the bottom.

The body members may be composed of any one of a number of substances; for example, rubber, any of the various plastics, such as vinyl chloride, and the like, and special vinyl chloride-plasticizer mixtures which provide a thin, somewhat elastic sheet, are particularly suitable. Preferably, the composition of the material is such as to permit great flexibility without significant distortion by elongation when inflated. Thus it is to be understood that the inflatable member does not change substantially any of its dimensions when inflated, but rather the two sides of the enclosure simply move apart during inflation so as to provide a large enclosure for the inflating fluid.

The textile covering may consist of any of the conventional textile materials. However, preferably the inner covering consists of a cotton material such as poplin, the outer covering consists of a synthetic material such as rayon or any of the other well-known synthetics. By such a construction, the outer surface is somewhat elastic so as to stretch upon inflation of the aid, to which it is subjected, while the inner surface is of a material which readily frictionally engages the wearer's skin so as to assist in holding the aid in place.

The device is worn so that the buckle **16** is at the wearer's back. Thus, the inflating tube is in front, where it may easily be reached. The belt **15** is made of elastic material, so as to provide a snug fit and to expand slightly when the aid is inflated.

In FIG. 2 there is shown an alternate embodiment for attaching the inflating tube **30** to the enclosure **11**, which is illustrated in its inflated condition, so that the inner body member previously referred to and now designated as **40**, may now be shown. The outer body member **20** has an aperture therein, in which is disposed and sealed, an inflating tube inlet **41** of flexible material. The inflating tube **30** extends through the inlet **41** and is sealed thereto. Thus, a fluid passage is provided through the inflating tube **30** into the space between the body members **20** and **40**.

As a practical example of a swimming aid adapted for use by a wearer with a waist of from twenty-five to thirty inches, the total width of the four inflatable portions is twenty inches, and the length tapers from eleven to eight inches. The apertures are two-thirds inch in width, and the fluid passages one and one-quarter inch in width. The inflating tube is twelve inches long, and the device, when inflated, provides a buoyant force of eleven and one-half pounds, sufficient to hold a normal person afloat. The inner and outer impervious members each consist of two-ply vinyl chloride-plasticizer composition of a thickness of ten-thousandths of an inch. The belt **15** is eight inches in length and the textile covering extends two inches to either side of the inflatable enclosure **11** so as to provide for the attaching thereto of the buckle **16** and belt **15**.

The invention claimed is:

A swimming aid adapted to be worn around a wearer's waist under a bathing suit comprising

a textile covering having an inner panel and an outer panel forming an outer envelope of a horizontally elongated pentagonal configuration conforming substantially to the lower abdominal region of a human body and having buckle means extending horizontally from the upper end portions thereof for attaching encirclement of the wearer's waist, said outer panel being somewhat elastic to enable outward expansion, said inner panel being of a material which frictionally engages the skin of the wearer's abdomen to aid in maintaining a desired hidden position under a bathing suit, a pair of coextensive impervious body members of film-like thickness sealed together at their peripheral edges forming an inner envelope contained within said outer envelope and conforming in pentagonal configuration therewith, said body members having a sealed elongated major aperture extending transversely vertically and positioned horizontally centrally thereof and two sealed elongated minor apertures similarly vertically disposed on each side thereof, each of said apertures terminating at either end thereof in a sealed circular portion of greater diameter than the width of the central portion of the aperture, said sealed circular portions being spaced from the sealed periphery of said body members to define fluid passages at both top and bottom, the central portion of each aperture being long and narrow to define four comparatively very wide air-inflatable portions,

stitching means connecting the outer and inner panels of the textile covering substantially throughout the length of each of the apertures to aid in holding the four very wide inflatable portions, when inflated, in an only slightly enlarged flat body conforming form,

an inflating tube extending through the textile covering and into said inner envelope,

and means for selectively sealing said inflating tube.

References Cited in the file of this patent

UNITED STATES PATENTS

660,420	Dutton	Oct. 23, 1900
1,282,468	Scheel	Oct. 22, 1918
1,575,255	Czyzykowski	Mar. 2, 1926
1,854,378	Mattson	Apr. 19, 1932
2,019,086	Milne	Oct. 29, 1935
2,313,151	Johnson	Mar. 9, 1943
2,633,618	Moe	Apr. 7, 1953
2,893,020	Miller	July 7, 1959

FOREIGN PATENTS

861,808	Germany	Jan. 5, 1953

UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,134,995 June 2, 1964

Heinz W. Kirchner

It is hereby certified that error appears in the above numbered patent requiring correction and that the said Letters Patent should read as corrected below.

Column 2, line 40, for "deflection" read -- deflation --.

Signed and sealed this 3rd day of November 1964.

(SEAL)
Attest:

ERNEST W. SWIDER
Attesting Officer

EDWARD J. BRENNER
Commissioner of Patents