April 27, 1965

K. PETERSON

3,179,963

BUOYANT SWIMMING VEST

Filed Oct. 4, 1963

2 Sheets-Sheet 1

FIG. 2

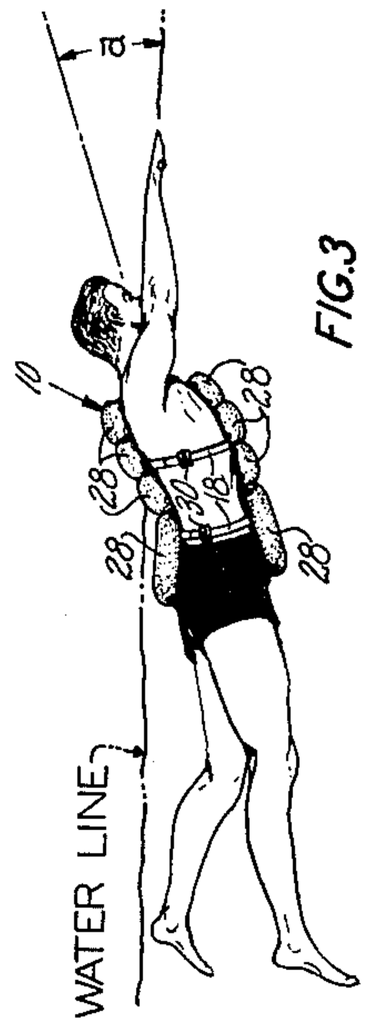

FIG. 3

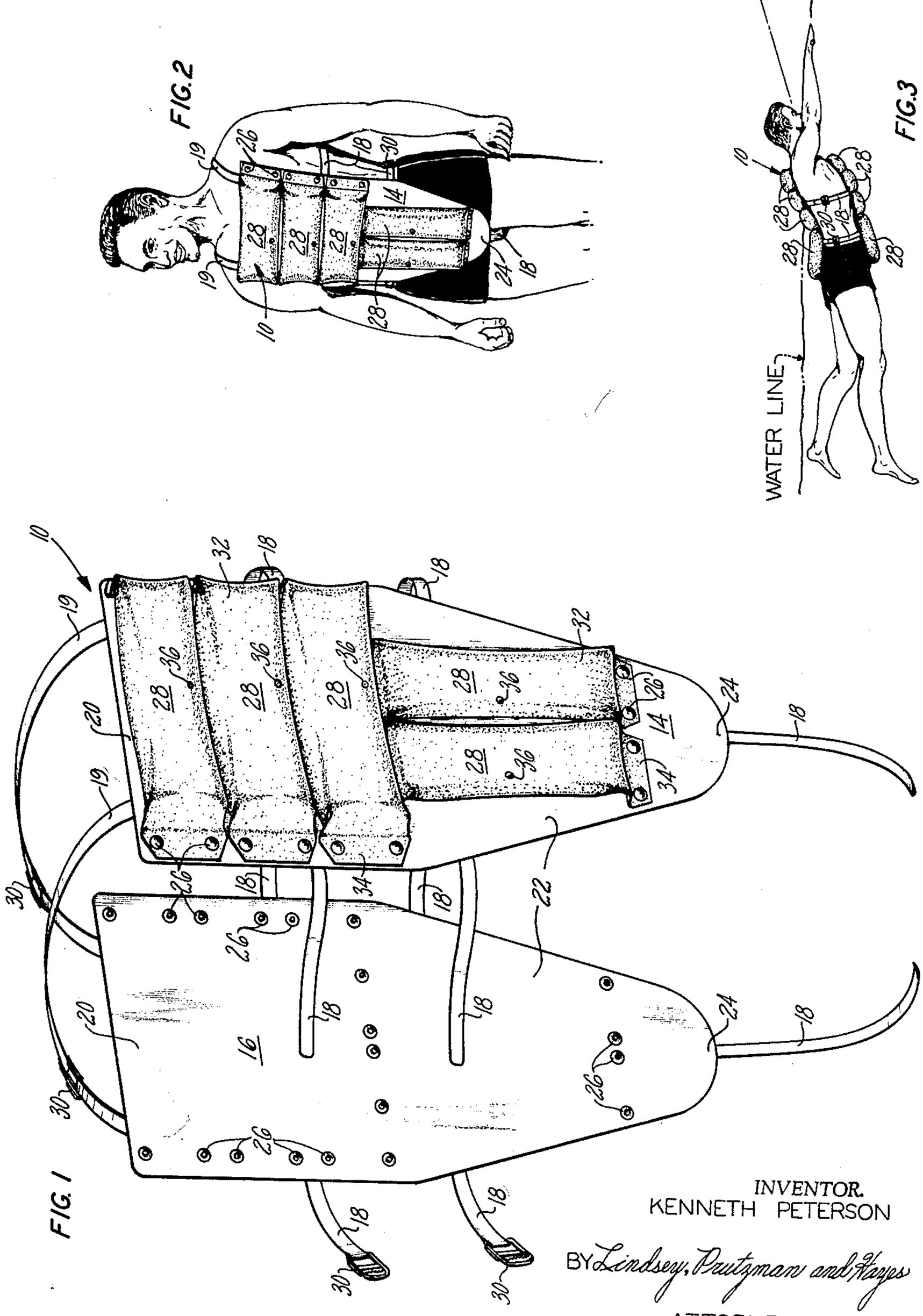

FIG. 1

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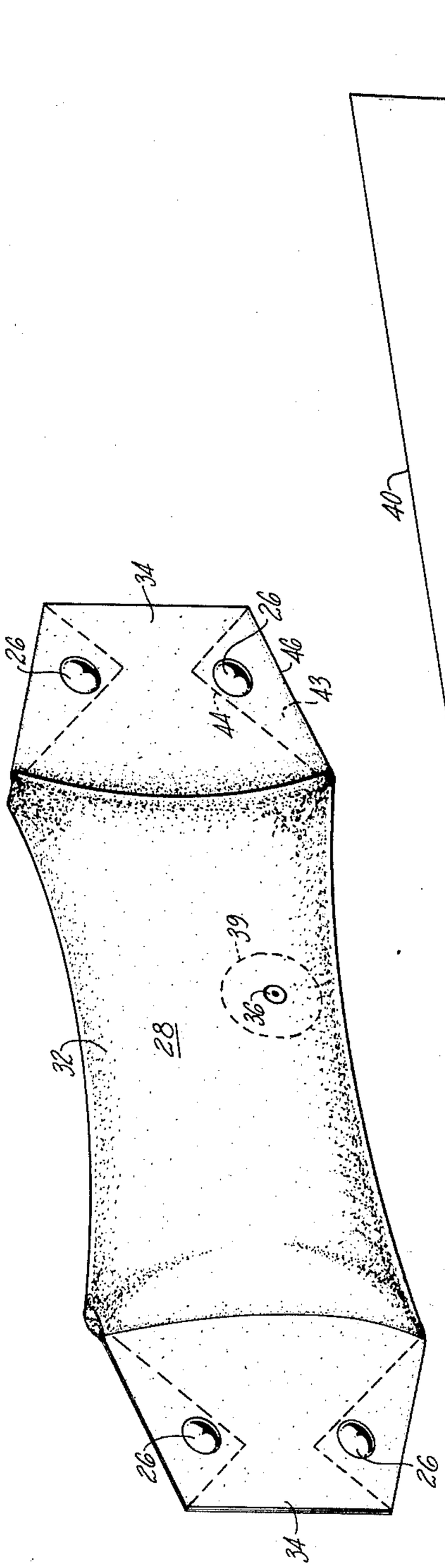

FIG. 4

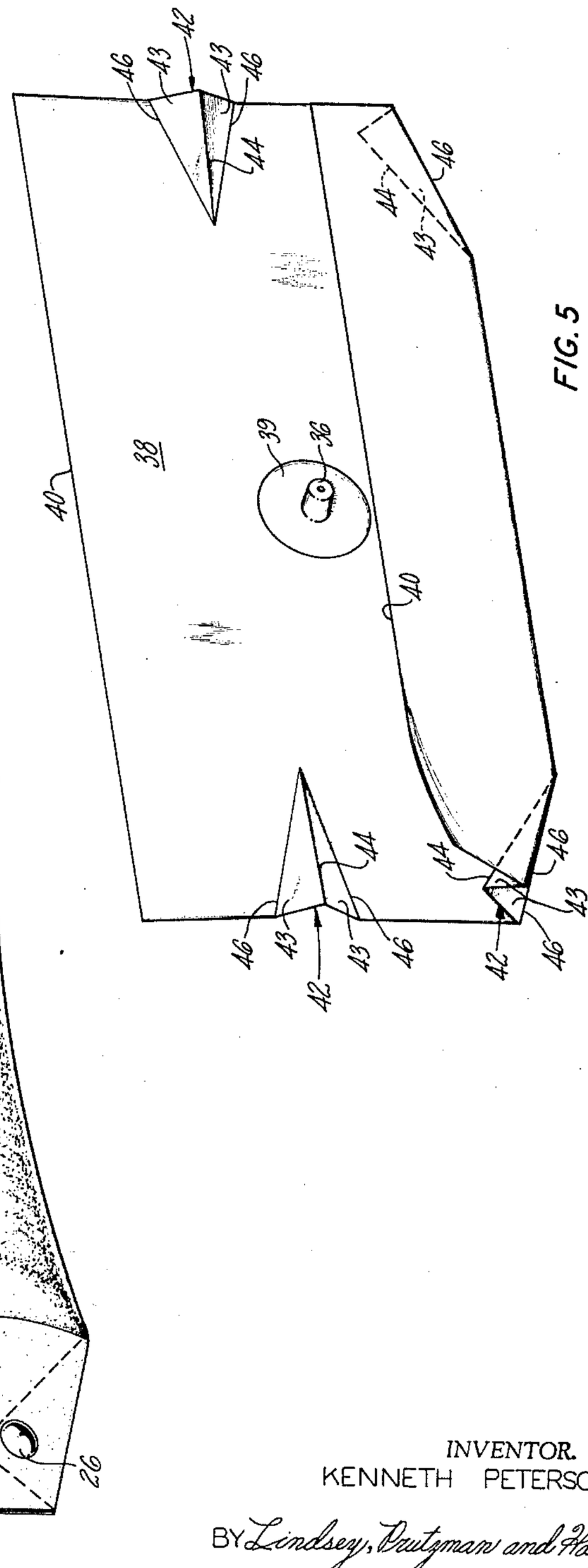

FIG. 5

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BUOYANT SWIMMING VEST

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Filed Oct. 4, 1963, Ser. No. 313,911
8 Claims. (Cl. 9—338)

The present invention relates to swimming aids and in particular to a new and improved buoyant vest or doublet notably useful in connection with the instruction of novice swimmers.

It is a principal object of the present invention to provide a new and improved buoyant vest which can be easily donned, which can be readily adjusted for any novice swimmer within a wide range of weights and sizes for maintaining him at the appropriate body attitude and which thereby assists him in learning to swim while permitting complete freedom of movement of his arms and legs with the result that he rapidly loses all fear of water, develops confidence and increases his swimming competency.

It is another object of the present invention to provide an improved buoyant swimming vest or doublet adapted for shifting the effective center of gravity of a swimmer toward the lower portion of his body whereby his head is elevated generally above the water line and his body is maintained at the proper angular attitude within the water.

It is a further object of the present invention to provide an improved buoyant swimming vest or doublet possessing a large range of buoyancy and with which the degree of buoyancy and the center of buoyancy can be readily adjusted as the novice swimmer increases in proficiency.

Another object of the present invention is to provide a buoyant vest of lightweight and durable construction which is inexpensive to manufacture and which can be reliably and conveniently used by swimmers in various stages of swimming competency.

Still another object of the invention is to provide a buoyant vest having a new and improved buoyant cell adaptable for varying buoyancy, which is strong and durable and which can be readily attached to or detached from the vest as desired.

Other objects will be in part obvious and in part pointed out more in detail hereinafter.

The invention accordingly consists in the features of construction, combination of elements and arrangement of parts which will be exemplified in the construction hereafter set forth, and the scope of the application of which will be indicated in the appended claims.

In the drawings:

FIG. 1 is a perspective view of a preferred embodiment of a buoyant vest of the present invention;

FIG. 2 is a reduced perspective view of the buoyant vest as it is typically worn by a novice swimmer;

FIG. 3 is a reduced side elevation view showing a novice swimmer wearing the bouyant vest in the water;

FIG. 4 is an enlarged perspective view of a buoyant cell of the vest; and

FIG. 5 is a perspective view of the buoyant cell at an intermediate stage of construction.

Referring now to the drawings in greater detail and more particuarly to FIGS. 1–3, an embodiment 10 of the buoyant vest or doublet of the present invention includes a front plate 14 and a rear or back plate 16 with each plate possessing a plurality of adjustable straps or tie strings 18 and a pair of shoulder straps 19 for interconnecting the front and rear plates and thereby securely position the vest on the wearer.

The front plate 14 and back plate 16 are shown of substantially identical configuration and possess a pentahedral shape having the general outline of the human torso. For convenience and simplicity of discussion, each plate will be considered as being divided into a upper or chest portion 20 of generally rectangular or square-shape and a lower or abdominal portion 22 of generally triangular shape integrally constructed with and disposed below the chest portion with its apex 24 at the lowermost end of the plate.

A plurality of conventional snap fasteners 26 are provided for mounting a number of buoyant cells 28 to the plates 14, 16, which cells are thereby made readily detachable from the plates. Preferably the male portion of the fasteners 26 are attached to the plates 14, 16 and the female portion of the fasteners are attached to the buoyant cells 28. The male fastener portions are shown arranged for the attachment of three buoyant cells 28 to the chest portion 20 of each of the plates and a pair of cells 28 to the abdominal portion 22. The buoyant cells 28 on the chest portion 20 are mounted transversely on the plates generally parallel with the wearer's shoulders and extend substantially the full width of the wearer's chest, whereas the cells 28 on the abdominal portion 22 are mounted longitudinally of the wearer's body.

In the preferred embodiment 10, the vest or doublet is made entirely of rubber, or similar sheet material, which is both waterproof and impermeable to air. Nonetheless, in accordance with an advantage of the present invention, the front and rear plates may be alternatively made from another lightweight material of suitable strength. Many durable rubberized or rubber-coated sheet materials as well as plastic-coated, waterproof fabrics are suitable for the present invention; however, nylon fabric coated with neoprene has been found particularly advantageous as it combines the water repellent properties of the neoprene with the lightweight, strength and durability of the nylon. Accordingly, the plates 14, 16 are preferably constructed from this material with two layers thereof being properly cemented or otherwise secured together with the straps 18, 19 secured therebetween.

The vest may be conveniently donned by passing the head between the pair of shoulder straps 19 whereby the vest drapes over the front and back of the wearer's torso and is thereafter properly secured with the straps 18, 19. These straps may be provided with buckles 30 or otherwise constructed so that adjustment of the plates on the wearer is easily accomplished by simple adjustment. Adjustment of the plates on the shoulders should be made so that the two longitudinally disposed buoyant cells 28 on the abdominal portion 22 are centrally positioned adjacent the center of gravity of the wearer, and therefore in most instances immediately below the waist in the pelvic or abdominal region of the body. When the plates have been thus positioned, the straps 18 on the lateral edges and at the apex 24 of the plates are connected by buckles or by tying as appropriate for firmly securing the vest to the wearer.

Having positioned and secured the vest on his body, a novice swimmer can readily engage in swimming drills with the correct swimming attitude being assured by the vest, as for example, as seen in FIG. 3, at an angle *a* of approximately 20 degrees for learning the swimming stroke known as the "crawl." Although generally the actual center of gravity of the human body is in the pelvic region, the buoyant vest operates to shift the effective center of gravity of a swimmer due to the buoyancy of the immersed cells. Conventionally, when swimming the "crawl" all the buoyant cells on the front plate are immersed and a portion of the cells, including the longitudinally disposed buoyant cells, on the back place are immersed and thereby together contribute in maintaining the swimmer at the proper swimming attitude. Due to the arrangement of the cells 28 on the vest, the novice

swimmer is roll stabilized or buoyantly urged to a flat or neutral roll position as the swimmer rolls away from such position. With this assistance a smooth and proper swimming stroke is more quickly developed without the otherwise accompanying struggle to maintain the proper swimming attitude. The buoyant cells thereby operate to maintain the swimmer's nostrils and mouth above the surface of the water and at the same time maintain the swimmer at the proper angle, with respect to the surface. This body attitude is obtained without in any way interfering with the movement of his arms or legs, whereby instruction of and learning by the novice swimmer of the proper arm and leg motions is facilitated.

In addition to providing the proper body attitude and thereby accelerating the learning process, it is an advantage of the present invention that the buoyant doublet possesses detachable buoyant cells **28** which may be selectively removed or variably inflated as the novice progresses in swimming proficiency. For example, the cells on the back plate might be entirely removed after a swimmer reaches a certain level of proficiency, and thereafter the longitudinally disposed cells **28** on the abdominal portion **22** and one or more of the transversely disposed cells on the chest portion **20** could be removed to selectively reduce the buoyancy of the vest as the novice swimmer gains further confidence and proficiency in the water.

As hereinbefore described the detachable cells **28** are made of inelastic, flexible, airtight and water-impermeable sheet material, for example sheets made of neoprene coated nylon, and are preferably filled with air which thereby acts as the buoying medium. The cells have an elongated central portion **32** and two flat, tapered tab portions **34** located on opposite ends of the central portion. When inflated, as best shown in FIG. 4, the central portion **32** has a generally cylindrical, pillow-shape configuration throughout its length with its ends tapering down to the tab portions **34** which, being sealed, remain flat. The central portion **32** of each cell has affixed thereto substantially midway between the tab portions **34** an air valve **36** of the type used for inflating footballs or numerous other inflated athletic balls. Therefore, the cells may be conveniently inflated as by a conventional pneumatic pump for providing the desired buoyancy. Of course, as an alternative to the inflation with air, any nontoxic, nonexplosive and nonflammable gas may be used, such as argon, nitrogen, carbon dioxide, helium or mixtures thereof.

Referring to FIG. 5, the cells **28** are economically and reliably constructed from a generally rectangular piece of sheet material **38** having the usual circular base **39** of the air valve **36** affixed to the inside surface of the sheet so that the valve is flush with the outside surface of the completed cell. According to the preferred method of producing the cells **28**, the oppositely disposed edges **40** of the generally rectangular sheet are first brought into overlapping relationship and sealed to form a generally cylindrical configuration with open ends. Then at each open end of the cylinder two diametrically opposed triangular areas **42** are centrally folded inwardly to form two opposed pairs of inwardly extending overlapping triangular portions **43** with a common folded edge **44**, and with their other folded edges **46** defining a tapered edge of the tabs **34**. The entire tab area is then sealed so as to make the central portion **32** of each cell **28** impervious to air. The sealing operation can be effectively accomplished using cement although similar means such as dielectric heating or vulcanization may be utilized. After the tab portions are sealed, the female portion of the fasteners **26** are attached thereto preferably in the triangular reinforced areas which possess a four-layer thickness of material, thus adding strength and durability to the cells.

Thus as will be apparent from the above description, the buoyant vest of the present invention provides a versatile swimming aid capable of adjustable buoyant

capacity for maintaining each novice swimmer at the proper body attitude for his level of swimming competency. Additionally, the doublet can be readily adjusted to position its center of buoyancy for accommodating swimmers of a wide range of weights and sizes and provides a highly useful and convenient buoyant support which does not interfere with the movement of a swimmer's arms and legs and which is nevertheless distributed symmetrically on the wearer's body. The vest provides for easy attachment and detachment of the buoyant cells as needed while ensuring the proper placement of those cells on the wearer. Further, the vest of the present invention has a lightweight and durable construction which can be economically manufactured and which is highly reliable over a long life span.

As will be apparent to persons skilled in the art, various modifications and adaptations of the structure above described will become readily apparent without departure from the spirit and scope of the invention, the scope of which is defined in the appended claims.

I claim:

1. For use in buoying a swimmer to a swimming attitude, a buoyant vest comprising a vest plate having a chest portion, means associated with the vest plate for attaching it to a wearer's body with the chest portion over the chest of the body of the wearer, a plurality of elongated variably inflatable buoyant gas cells constructed of flexible sheet material impermeable to air and water, and fastener means for detachably mounting the gas cells to the chest portion of the vest plate, said fastener means providing for mounting a plurality of gas cells to the chest portion of the vest plate for extension transversely of the wearer's body and in parallel alignment along the wearer's body, said buoyant gas cells being dimensioned to extend substantially the full width of the chest portion to provide substantially uniform buoyancy across the chest of the wearer that is adjustable by varying the inflation of the buoyant gas cells.

2. For use in buoying a swimmer to a swimming attitude, a buoyant vest comprising a vest plate having a chest portion and an abdominal portion, attaching means associated with the vest plate providing for wearing the chest and abdominal portions over the chest and abdomen respectively of the body of a wearer, a plurality of elongated inflatable gas cells, and fastener means for detachably mounting the gas cells to the chest and abdominal portions of the vest plate, said fastener means providing for mounting a plurality of gas cells to the chest portion for extension transversely of the wearer's body and at least one gas cell to the abdominal portion for extension longitudinally of the wearer's body.

3. For use in buoying a swimmer to a swimming attitude, a buoyant vest comprising a vest plate having a chest portion and an abdominal portion, attaching means associated with the vest plate providing for wearing the chest and abdominal portions over the chest and abdomen respectively of the body of the wearer, said attaching means including a pair of shoulder straps adjustable for positioning the vest plate longitudinally on the wearer's body and a plurality of other straps for securing the vest plate to the wearer's body, a plurality of elongated inflatable buoyant gas cells, and fastener means for detachably mounting the gas cells to the chest and abdominal portions of the vest plate, said fastener means providing for mounting a plurality of gas cells to the chest portion for extension transversely of the wearer's body and at least one gas cell to the abdominal portion of extension longitudinally of the wearer's body.

4. For use in buoying a swimmer to a swimming attitude, a buoyant vest comprising front and back plates each having an upper portion and a lower portion, attaching means associated with the vest plates providing for wearing the plates on the front and back of the wearer's body with the upper portion substantially above the waist of the wearer and the lower portion substantially below his waist, a plurality of elongated inflata-

ble gas cells, and fastener means for detachably mounting the gas cells to the upper and lower portions of the plates, said fastener means providing for mounting a plurality of cells to the upper portion of each of the plates for extension transversely of the wearer's body and at east one gas cell to the lower portion of each of the plates for extension longitudinally of the wearer's body.

5. The buoyant vest of claim 4 wherein the elongated inflatable gas cells on the upper portions of the plates extend substantially the full width of the plates and wherein the fastener means comprises a plurality of fasteners having male and female fastener parts affixed to the vest plates and to adjacent the longitudinal ends of the gas cells.

6. For use in buoying a swimmer to a swimming attitude, a buoyant vest comprising front and back plates of flexible material, a plurality of disconnectible straps including a pair of adjustable shoulder straps for positioning the plates on the front and back respectively of the body of a wearer, each of said plates having an upper portion and a lower portion, a plurality of elongated buoyant gas cells, and fastener means for detachably mounting the gas cells to the upper and lower portions of the front and back plates, said fastener means providing for mounting a plurality of gas cells to the upper portion of each plate for extension transversely of the wearer's body and at least two gas cells to the lower portion of each plate for extension longitudinally of the wearer's body, said fastener means including a plurality of fasteners having male and female fastener parts affixed

to the front and back plates and to adjacent the longitudinal ends of the gas cells.

7. For use in a buoyant swimming vest, a detachable buoyant member comprising an elongated buoyant cell constructed with a single generally rectangular sheet of inelastic flexible material impermeable to air and water, said buoyant cell having a generally cylindrical elongated central portion and a pair of flat longitudinal end tab portions with outwardly tapered edges, said tab portions being provided by adhering opposed surfaces of the sheet material with inwardly formed overlapping triangular areas of sheet material therebetween providing the tapered edges, an air valve affixed to the sheet material for inflating the buoyant cell and thereby render the cell buoyant, and means on the end tab portions for attachment of the buoyant cell.

8. The detachable buoyant member of claim 7 wherein the attaching means includes a pair of detachable fastener parts on each end tab portion affixed to the end tab portions adjacent the tapered edges and over the inwardly formed overlapping triangular areas of sheet material.

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