Sept. 10, 1968 R. S. SCHEURER 3,400,415

SPORTING EQUIPMENT

Filed June 12, 1967 3 Sheets-Sheet 1

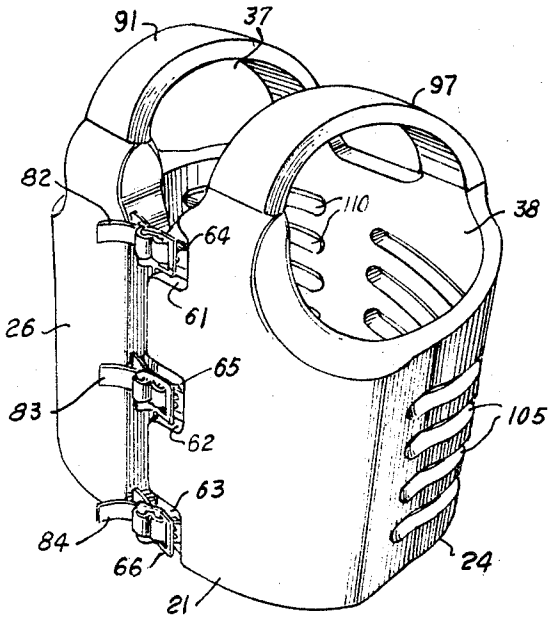


Fig. 1

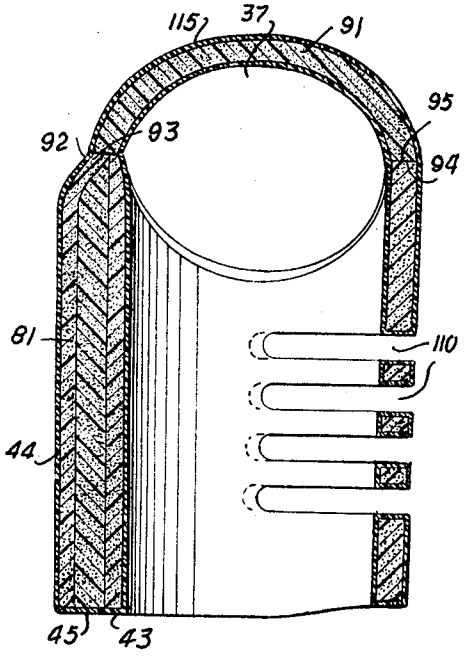


Fig. 5

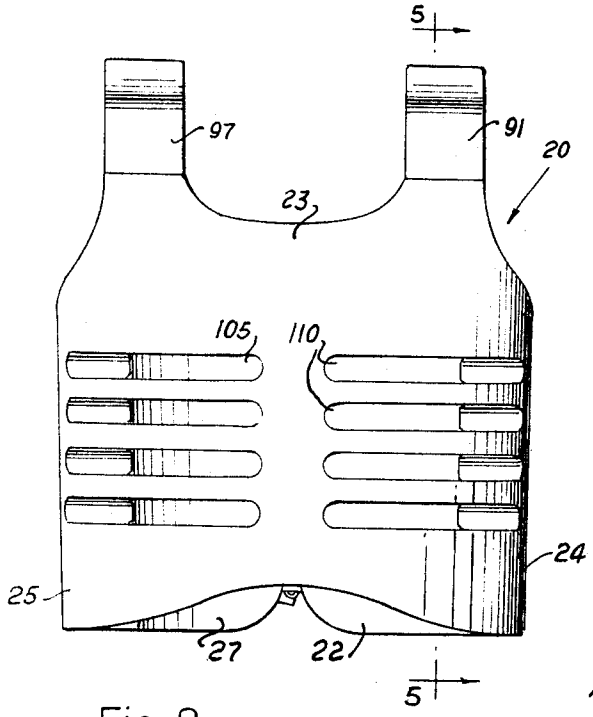


Fig. 2

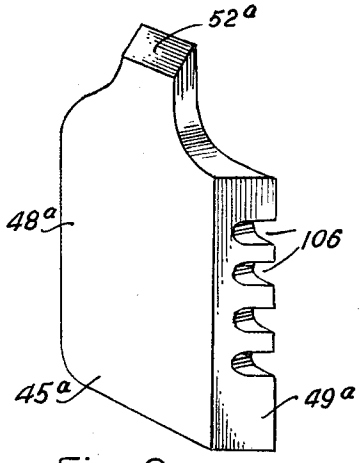


Fig. 8

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Sept. 10, 1968 R. S. SCHEURER 3,400,415

SPORTING EQUIPMENT

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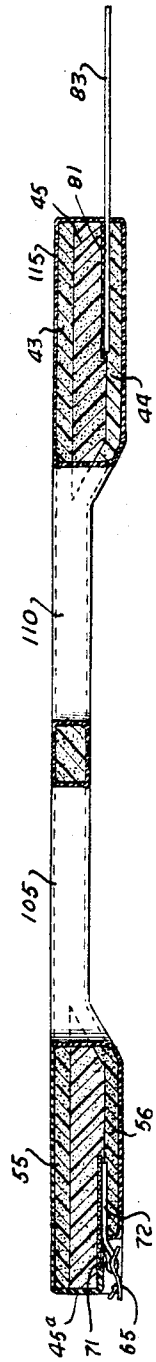


Fig. 4

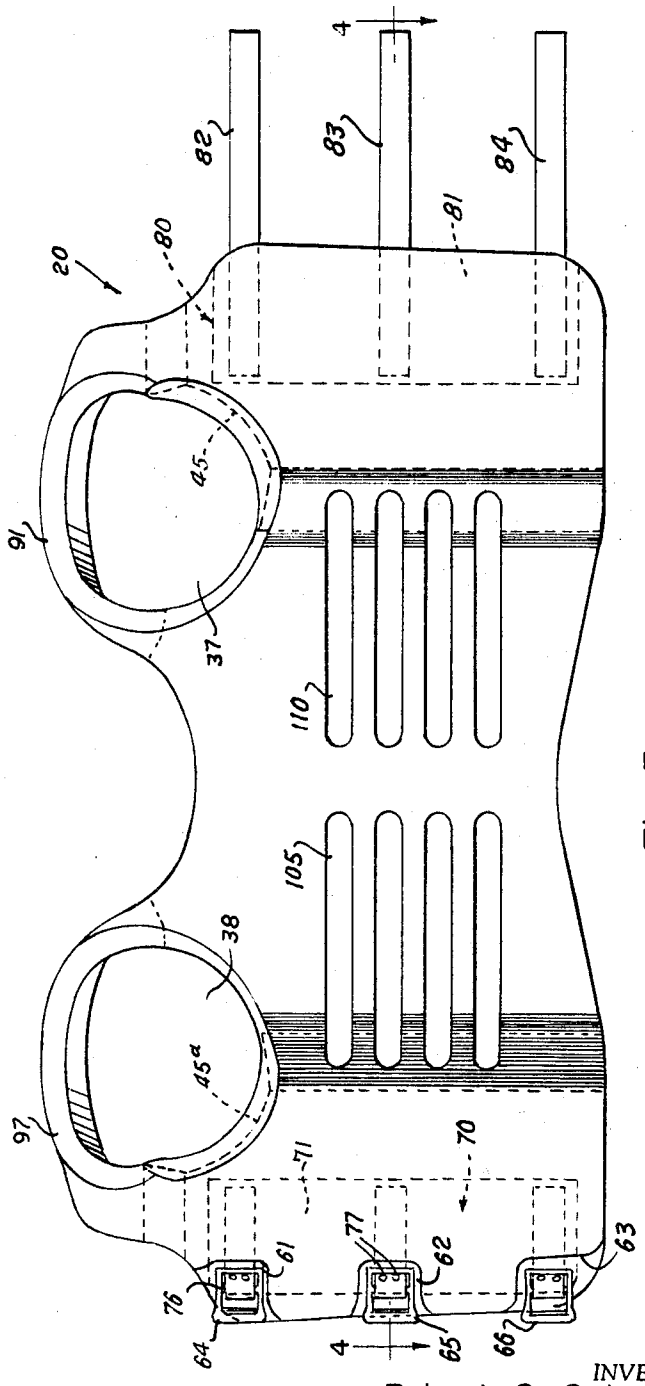


Fig. 3

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Sept. 10, 1968 R. S. SCHEURER 3,400,415

SPORTING EQUIPMENT

Filed June 12, 1967 3 Sheets-Sheet 3

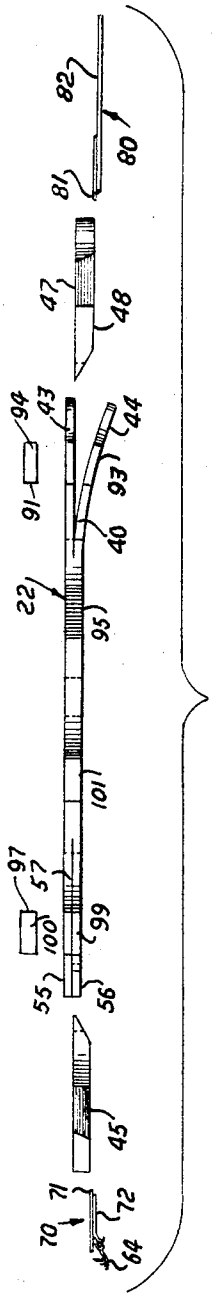


Fig. 7

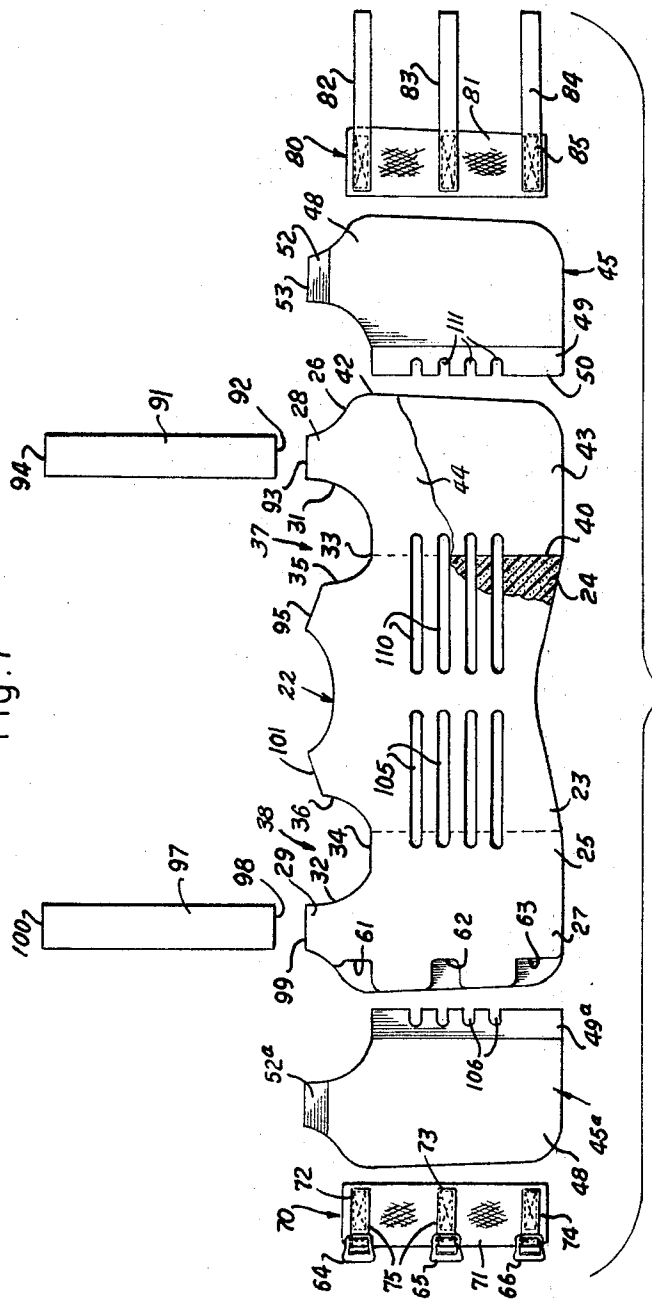


Fig. 6

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3,400,415

SPORTING EQUIPMENT

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Continuation-in-part of application Ser. No. 548,129, May 6, 1966. This application June 12, 1967, Ser. No. 645,228

12 Claims. (Cl. 9—342)

ABSTRACT OF THE DISCLOSURE

A buoyant jacket formed of a resilient buoyant substance disposable about the chest of the wearer to support the wearer in the water with his head above the water and tilted rearwardly.

This application is a continuation-in-part of my copending application, Ser. No. 548,129, filed May 6, 1966, now Patent No. 3,360,814.

This invention relates to sporting equipment and more particularly to buoyant jackets.

An object of this invention is to provide a new and improved buoyant or life jacket for supporting the wearer thereof in the water.

Another object is to provide a life jacket which is comfortable to wear.

Another object is to provide a new and improved life jacket for protecting the wearer from injury when the wearer strikes water with relatively great force, as when falling while being towed at a relatively high speed on water skis.

Still another object is to provide a life jacket which is resilient to conform to the chest of the wearer and grip the chest through substantially its whole area whereby the jacket cannot move relative to the chest to impart a blow thereto when the wearer strikes the water with relatively great velocity and force.

A further object is to provide a life jacket formed of a buoyant substance having a greater volume of a buoyant substance in the front than in the back so that it will cause the wearer to float in a rearwardly inclined position to hold the wearer's head out of the water and his face facing upwardly.

A still further object is to provide a life jacket having a body portion formed of a flat sheet of resilient shock absorbent buoyant substance which when disposed about the chest of the wearer assumes an arcuate shape with the internal cross sectional area of the life jacket being inherently smaller than the area of the chest of the wearer, the vertical edges of the body portion being provided with fastening means for drawing the edges of the body portion toward and into close proximity to one another whereby the body portion may be stretched resiliently about the chest of the wearer and cause the body portion to firmly grip the chest.

A further object is to provide a life jacket wherein buoyant inserts or pads are disposed in the front portion of the flat sheet to add buoyancy to the front portion of the jacket.

Another object is to provide a life jacket wherein the body portion at the adjacent vertical edges thereof is provided with outwardly opening recesses in which are disposed the fastening means, such as straps and buckles, so that the adjacent edges may be positioned close to one another and the buckles prevented from contacting the body of the wearer.

Still another object is to provide a life jacket having shoulder straps connected to the body portion which limit downward movement of the jacket on the body of the wearer.

Still another object of the invention is to provide a life jacket having reinforcing means secured to the body portion, the reinforcing means including two non-elastic flexible front reinforcing assemblies embedded in the front sections of the body portions, the fastening means of the jacket being secured to the reinforcing assemblies.

A still further object is to provide a life jacket where the body portion is provided with slots to provide greater elasticity to the rear or back portion thereof to cause the jacket to have a relatively great buoyant volume thereof disposed in its front portion as compared with its rear portion without causing the front portion to be of excessively great thickness, and to provide for air flow between the exterior and the interior of the jacket.

A still further object is to provide a life jacket having slots in its rear portion through which water may flow outwardly when the wearer thereof falls forward into the water to minimize the stress and strains to which the life jacket is subjected.

A still further object is to provide a life jacket wherein the assembly of the body portion, the inserts and the reinforcing assemblies is covered with a water impervious resilient coating.

Additional objects and advantages of the invention will be readily apparent from the reading of the following description of a device constructed in accordance with the invention, and reference to the accompanying drawings thereof, wherein:

FIGURE 1 is a perspective view of a life jacket embodying the invention;

FIGURE 2 is a back view of the life jacket;

FIGURE 3 is an exterior view of the jacket with the jacket disposed in a flattened position;

FIGURE 4 is a sectional view taken on line 4—4 of FIGURE 3;

FIGURE 5 is a sectional view taken on line 5—5 of FIGURE 2;

FIGURE 6 is an exploded view of the components of the life jacket as viewed from the front with some portions thereof broken away;

FIGURE 7 is an exploded view of the components of the life jacket as viewed from above; and

FIGURE 8 is a perspective view of one of the auxiliary buoyant inserts or pads of the life jacket.

Referring to the drawings, the life jacket **20** embodying the invention includes a body portion formed of a flat sheet **22** of a resilient shock-absorbing buoyant substance, such as unicellular vinyl or rubber foam having numerous small voids or cells which render the density of the life jacket much lower than the density of water. The sheet, which may be of a suitable thickness, for example, three-quarter or one inch thick and, has a back portion or panel **23**, side portions or panels **24** and **25**, and right and left front portions or panels **26** and **27**, respectively. The front panels **26** and **27** have upper extensions **28** and **29** respectively, whose rear edges **31** and **32** together with the top edges **33** and **34** of the side panels **24** and **25** and the side edges **35** and **36** of the upper portion of the back panel define the upwardly opening right and left arm holes or recesses **37** and **38** for receiving the arms of the wearer.

The flat sheet has a vertical side slit **40** which extends inwardly from its right edge **42** and divides the right front panel into an inner section **43** and an outer section **44**. A floatation pad **45**, which is of the same substance as the flat sheet **22**, is inserted in the slit between the inner and outer portions **43** and **44**, its inner planar surface **47** being secured to the inner surface of the inner portion **43** by a suitable adhesive or bonding agent. The floatation pad has an outer planar surface **48** which extends parallel to its inner surface **47** and a vertical inner surface **49** which extends inwardly from the inner end of the outer flat surface **48** to the inner vertical edge **50** of the pad.

The upper outer surface **52** of the pad extends upwardly and inwardly from the top edge of the outer surface **48** to its top edge **53**. The left front panel of the sheet similarly is divided into inner and outer portions **55** and **56**, respectively, by a slit **57** between which the left floatation pad or insert **45***a* is insertable.

The insert **45***a* is a mirror image of the insert **45**, and, accordingly, its elements have been provided with the same reference numerals, to which the subscript "*a*" has been added, as the corresponding elements of the pad **45**.

The outer portion **56** of the left front panel is provided with three recesses **61**, **62**, and **63** in which are positioned the buckles **64**, **65**, and **66** respectively of a left reinforcing assembly **70**. The left reinforcing assembly **70** is disposed between the outer surface **48***a* of the left pad **45***a* and the inner surface of the outer portion **56** and includes a substantially rectangular piece or panel **71** of nylon fabric to which are secured three buckle straps **72**, **73** and **74** by means of stitches **75**. The outer end portions of the straps extend about the central bars **76** of the buckles and are secured to their intermediate portions by means of rivets **77**. The reinforcing assembly is secured to the left panel in such a manner that the buckles are disposed in the outwardly opening recesses **61**, **62** and **63** outwardly of the outer surface of the portions of the left pad **45***a* exposed at these recesses.

A right reinforcing assembly **80** disposed between the outer surface **48** of the right pad **45** and the inner surface of the outer portion **44** of the right front panel **26** includes a substantially rectangular panel or piece **81** of nylon fabric to which are secured the inner end portions of straps **82**, **83** and **84** by means of rows of stitches **85**. The outer portions of the straps **82**, **83** and **84** are insertable to the front buckles **64**, **65** and **66**, respectively, to draw the edges of the jacket toward one another when the jacket is disposed about the chest of a wearer. The reinforcing assemblies are secured to the pads and the inner surfaces of the outer portions of the front panels by a suitable adhesive or bonding agent.

A right shoulder strap **91** of the jacket which is also formed of the same substance as the sheet has a front downwardly facing end surface **92** which is secured to the upwardly facing upper surface **93** of the right front panel and a rear end surface **94** which is secured to the upwardly facing surface **95** of the back panel **23**. Similarly, the left shoulder strap **97** has a front downwardly facing end surface **98** which is secured to the upwardly facing upper surface **99** of the left front panel and a rear end surface **100** which is secured to the upwardly facing surface **101** of the back panel. The straps are secured to the body sheet by an adhesive or bonding agent.

The body sheet **22** is provided with a plurality of left vertically spaced horizontal slots **105** which extend from locations spaced to the left of the center line of the back panel to locations below the left arm hole **38** of the jacket and the left floatation pad **45***a* is provided with recesses **106** at the location of its alignment with the front end portions of the slots. The body sheet is also provided with a plurality of right vertically spaced horizontal slots **110** which are aligned with the horizontal slots **105** and which extend from locations spaced to the right of the center line of the back panel to locations below the right arm hole **37** of the jacket. The right floatation pad **45** is provided with recesses **111** at the locations of its alignment with the front end portions of the slots **110**. The slots **105** and **110** and the recesses **106** and **111** of the floatation pads may be cut out before the insertion of the pads between the inner and outer portions of the front panels or the slots and recesses may be formed after the floatation panels have been secured to the body sheet.

In the manufacture of the life jacket, the floatation pads **45** and **45***a* are first inserted in the slits **40** and **57**, respectively, the outer portions **44** and **56** of the left and right front panels flexing outwardly to the positions illustrated in the drawings due to the provision of the beveled surfaces **49** and **49***a* on the floatation pads. As a result, the thickness of the jacket begins to increase at locations at approximately the center lines of the two arm holes and the jacket therefore does not unduly hinder natural movement of the arms of the wearer. The pads are then secured to the inner portions of the front panels of the body sheet. The reinforcing assemblies **70** and **80**, the assembly **70** without the buckles **64**, **65** and **66**, are then positioned as illustrated in the drawings and are secured to the floatation pads and to the inner surfaces of the outer front panel portions **48** and **56** by an adhesive or bonding agent. The contacting surfaces of the outer portions of the front panels and the pads not in alignment with the rectangular panels **71** and **81**, are also secured to one another by such adhesive or bonding agent. The right and left shoulder straps **91** and **97** are then secured to the body sheet. The assembly of the body sheet, the floatation pads, the reinforcing assemblies of the shoulder straps is then coated with a coat of **115** of plastic resilient substance, such as vinyl, rubber or the like. The coating may be of the same substance as the substance of which the body sheet, floatation pads and the shoulder straps are formed except that it is not unicellular but solid in form. Since all elements of the jacket, except the reinforcing assemblies, are resilient, the portions of the life jacket between the reinforcing assemblies may be stretched resiliently. The outer end portions of the straps **72**, **73** and **74** are then looped above the middle bars of the buckles **64**, **65** and **66**, respectively, and their free ends are then secured to intermediate portions thereof by means of rivets.

In use, the wearer inserts his arms through the arm holes **37** and **38**. The internal cross sectional area or space defined by the internal surface of the life jacket is smaller than the chest of the wearer when the jacket is in its inherent non-stretched condition so that its vertical edges are spaced two to six inches apart when the jacket is placed on the wearer. The straps **82**, **83** and **84** of the right reinforcing assembly are then inserted through the buckles **64**, **65** and **66**, respectively, and the vertical side edges of the life jacket are then drawn toward one another to the degree necessary to resiliently stretch the life jacket about the chest of the wearer and bring its vertical edges close to or in contact with one another. This stretching of the life jacket about the chest of the wearer is facilitated by the provision of the slots **105** and **110** which increase elasticity of the jacket at its back portion. The buckles, which are positioned in the recesses of the outer portion **56** of the left panel of the body sheet **22**, are now precluded from contacting the body of the wearer since the thickness of the left floatation pad **45***a* and the inner portion **55** of the body chest is interposed between the buckles and the chest. The slots **105** and **110** facilitate flow of air between the exterior and the interior of the jacket thus making the jacket comfortable to wear.

The life jacket is now stretched resiliently about the chest of the wearer and engages it firmly so that no portion of the jacket is loose on or spaced from the chest. Any loose portion of the life jacket would tend to strike the wearer if the wearer fell with great force into the water. Should the wearer now fall with relatively great velocity and force forwardly into the water, as is quite likely to occur if the wearer is water skiing, any water flowing into the jacket between the wearer's chest and the life jacket will tend to flow rearwardly therefrom and if the slots **105** and **110** were not provided would tend to exert a relatively great rearward force on the rear portion of the jacket which would tend to rip or break the jacket. The provisions of the slots **105** and **110** permits such water to flow outwardly therethrough and this minimizes the stresses and strains to which the jacket is subjected. As a result the jacket may be made of a relatively soft uni-cellular material so that it is comfortable to wear and still is capable of resisting the stresses and strains imposed thereon when the wearer falls into the water.

It will now be seen that a new and improved life jacket has been illustrated and described which can be easily and quickly placed about the chest due to the provision of the slots in the rear portions of the body of the life jacket and that the greater portion or volume of the buoyant substance is located at the front portion of the body of the wearer in water in a rearwardly and upwardly inclined position with the face of the wearer facing upwardly.

It will further be seen that the life jacket includes a body portion formed of a flat body sheet **22** provided with vertical slits in its side edges in which are disposed auxiliary flotation pads or inserts to add buoyancy to the front portions of the jacket.

It will further be seen that the body portion is provided with a plurality of horizontally extending vertically spaced slots **105** and **110** which together extend through substantially or approximately one half of the total length of the body portion and in the portions thereof which lie rearwardly of the center of gravity of the wearer thereof to reduce the buoyancy of these portions of the body and thus further increase the degree to which the life jacket of the wearer is inched upwardly and rearwardly by the jacket. It will further be seen that these slots **105** and **110** increase the elasticity of the body portion so that the jacket may be easily stretched about the chest of the wearer and provide for the flow of air and water between the exterior and interior of the jacket to make the jacket more comfortable to wear by providing some ventilation between the chest and the jacket and permitting escape of liquid rearwardly from between the chest and the jacket in the event the wearer falls forwardly into the water.

The foregoing description of the invention is explanatory only, and changes in the details of the construction illustrated may be made by those skilled in the art, within the scope of the appended claims, without departing from the spirit of the invention.

What is claimed and desired to be secured by Letters Patent is:

1. A life jacket including: a body portion of a resilient buoyant substance adapted to be stretched about the chest of the wearer, said body portion having substantially vertical side edges; and fastening means for releasably securing said edges of said body to one another and holding said body portion in resiliently stretched condition about the chest of the wearer, said body portion having a back section provided with a plurality of vertically spaced slots spaced rearwardly of said edges for decreasing the buoyance of said back section of the body portion located at the back of the wearer and for increasing its elasticity.

2. The life jacket in claim **1**, wherein said body portion is of increased thickness at front sections of said body portion extending from said edges for increasing the buoyancy of front sections of said body portion whereby said jacket is adapted to support the wearer thereof in water in a rearwardly and upwardly inclined position.

3. The life jacket of claim **2**, and shoulder strap means secured to said body portion for limiting downward movement of said body portion on the chest of the wearer.

4. The life jacket of claim **3**, wherein said body portion adjacent one of said edges is provided with outwardly opening recesses, said fastening means being disposed in said recesses and being held from contact with the body of the wearer by sections of said body portion defining inner ends of said recesses.

5. The life jacket of claim **4**, wherein said fastening means includes buckles positioned in said recesses adjacent said one of said edges and straps extending from the other of said edges and engageable with said buckles.

6. The life jacket of claim **5**, wherein said slots extend from locations spaced on opposite sides of the center line of the back portion of said body portion to locations below the arms of the wearer when the jacket is positioned on the chest of the wearer.

7. The life jacket of claim **1**, wherein said body portion includes a substantially rectangular sheet of resilient buoyant substance, said sheet comprising a pair of front panels extending laterally in opposite directions from substantially vertical side edges of said sheet, side panels extending rearwardly from said front panels and a back panel between said side panels, said sheet having vertical slits extending from said side edges, inserts of resilient buoyant substance disposed in said slits between said inner and outer portions of said front panels and extending from said side edges of said sheet for increasing the thickness of front panels of the life jacket, said sheet having two sets of vertically spaced horizontally extending slots extending from locations spaced from the center line of the back panel to said side panels.

8. The life jacket of claim **7**, wherein said inserts have inwardly extending bevel surfaces at their inner edges for causing said body portion to increase forwardly in thickness from locations at said side panels of said sheet.

9. The life jacket of claim **8**, and a pair of shoulder straps of resilient buoyant substance extending between said front panels and said back panel for limiting downward movement of the jacket on the wearer.

10. The life jacket of claim **9**, wherein one of said outer portions has a plurality recesses opening to one of said side edges of said sheet, said fastening means being positionable in said recesses outwardly of said inserts and exteriorly of the portions of the insert disposed inwardly of said one of said outer portions.

11. The life jacket of claim **10** wherein said fastening means comprises a first reinforcing assembly having a substantially rectangular flexible non-resilient piece disposed between said one of said inserts and of said outer portions, straps secured to said piece and extending outwardly to said recesses, and buckles connected to the outer ends of said straps and positioned in said recesses.

12. The life jacket of claim **11**, wherein said fastening means comprises a second reinforcing assembly having a second substantially rectangular flexible non-resilient piece disposed between and secured to the outer of said inserts and the outer of said outer portions, and straps secured to said secured piece extending outwardly of the outer of said side edges of said sheet and being securable to said buckles.

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