Jan. 8, 1946. R. CASELLE 2,392,576

SWIMMING AND LIFE SAVING EQUIPMENT

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Fig. 1

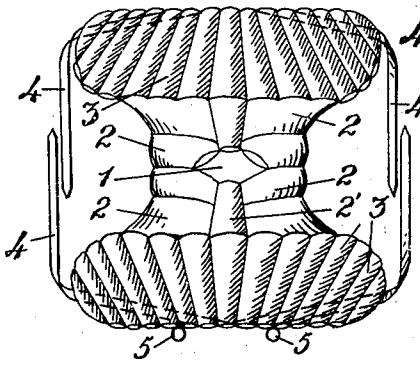


Fig. 2

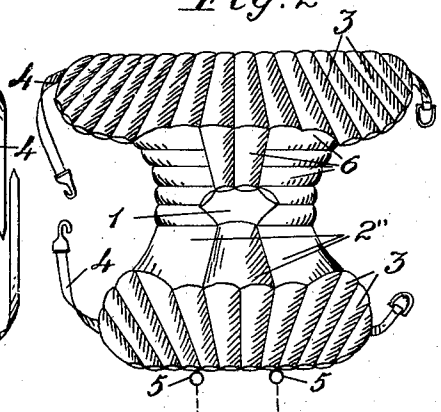


Fig. 5

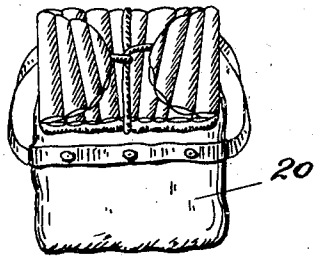


Fig. 8

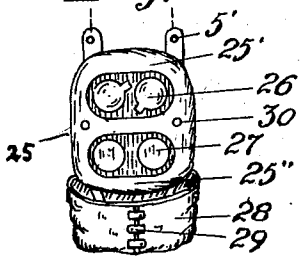


Fig. 9

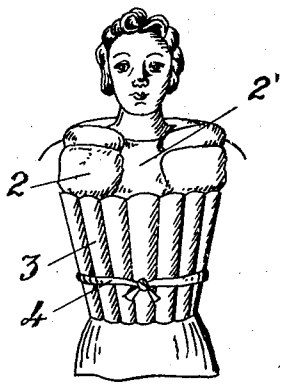
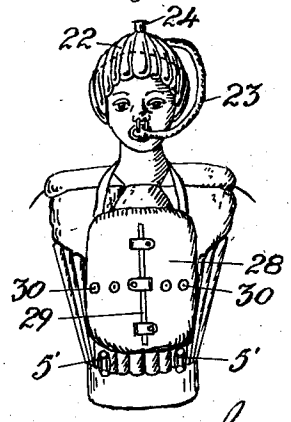


Fig. 10



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SWIMMING AND LIFE SAVING EQUIPMENT

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Fig. 3

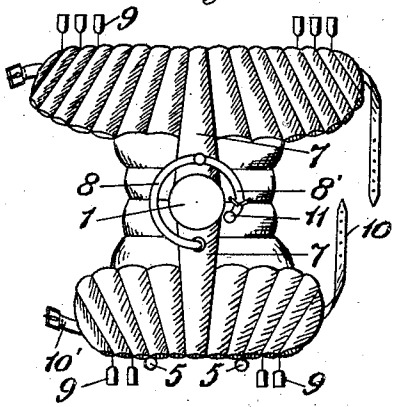


Fig. 4

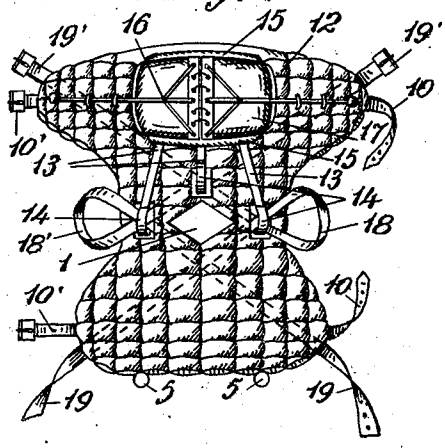


Fig. 7

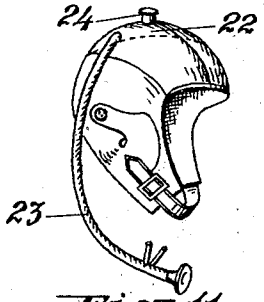


Fig. 6

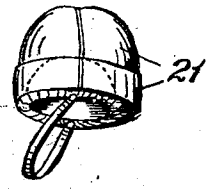


Fig. 11

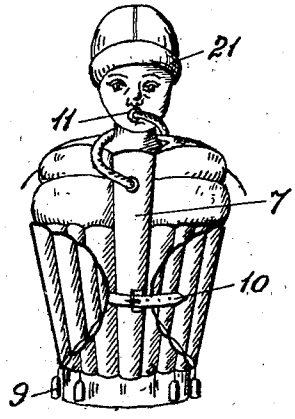
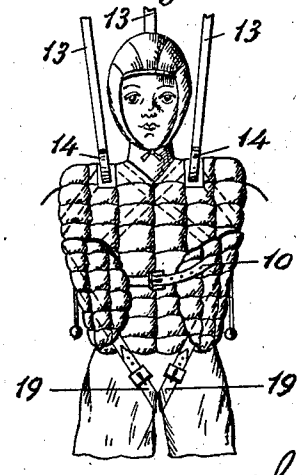


Fig. 12



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UNITED STATES PATENT OFFICE

2,392,576

SWIMMING AND LIFESAVING EQUIPMENT

Raffaele Caselle, Rapolla, Italy; vested in the Alien Property Custodian

Application April 27, 1940, Serial No. 332,049
In Italy May 4, 1939

5 Claims. (Cl. 9—20)

The present invention relates to improvements in life preserver equipment of the type involving voluminous water-resistant buoyant material enclosed in the manner of a cushion between two or more strips of water-proof fabric, the present equipment being designed for protecting persons not only against drowning but also against shocks, cold, and other dangers which occur during distress at sea and while swimming.

The life saving equipment according to the invention is characterised in that it employs approximately an X-shaped swimming vest which can be conformed closely to any adult body so as to eliminate any working of the device relative to the body, and wherein the buoyant padding is arranged to keep the head out of the water, whereby a stable and safe position of the body in the water is assured, avoiding sidewise tipping in the water.

A further feature of the present life preserving device resides therein that two tying devices are provided which are attached to diagonally oppositely located points so that with every height of body there is always obtained a symmetrical distribution of the buoyancy of the device. The cushioned swimming vest is divided, in accordance with the invention, into three parts of which the middle part is preferably provided with horizontally extending sections, whilst the front and rear parts consist of vertical sections extending conically towards the waist, whilst in all three parts the centre sections are padded with buoyant material to the greatest extent, the lateral extremities of the parts having the least padding. The swimming vest may, if desired, be provided with more padding on the front than on the back, whereby the body assumes in the water a vertical but slightly rearwardly inclined position so that the mouth will be located high above the water level.

The swimming device according to the invention is adapted to be combined with different accessories varying according to different applications, such as a swimming helmet, a parachute, a breathing device, ballast weights, and/or a food container and these combinations form also part of the invention.

A number of forms of construction of the invention are shown by way of example in the accompanying drawings, wherein:

Fig. 1 shows a simple form of construction of the device according to the invention with similar chest and back portions.

Fig. 2 shows a form of the device wherein the chest part is more heavily or thickly padded and wherein the rear part is wider than the front part to provide portions to overlap around the sides and be tied together in front of the wearer.

Fig. 3 shows a form of construction adapted especially for divers and the crew of submarine, and involving a breathing device and ballast weights.

Fig. 4 shows a separate form of construction for pilots who fly over the sea, and involving a parachute and securing straps.

Fig. 5 shows one of the present devices folded and placed in a bag.

Fig. 6 shows a form of buoyant material padded swimming and protecting helmet.

Fig. 7 shows another form of buoyant helmet having ear protecting means and breathing means.

Fig. 8 shows an auxiliary appliance comprising a bag for foodstuffs and a cover.

Fig. 9 shows how the device shown in Fig. 1 can be worn with the lateral extremities of the front part tied over those of the back part.

Fig. 10 shows the application of the said auxiliary appliance to a swimming device together with a helmet according to Fig. 7.

Fig. 11 shows the form of the invention shown in Fig. 3 supplemented by a simple helmet according to Fig. 6, showing the extremities of the back part tied in front rather than at the back of the wearer.

Fig. 12 shows how the device according to Fig. 4 can be worn with the extremities of the back part drawn around those of the chest portion, together with crotch straps, and a swimming helmet according to Fig. 7.

In the form of construction of the swimming vest shown in Fig. 1, in which the chest and back portions are similarly constructed, so that it is not possible for it to be worn the wrong way round, 1 indicates the opening through which the head is passed when the device is placed on the wearer, 2 indicates the padded sections which cover the shoulders, chest and upper portions of the back. These sections, according to the invention have the greatest amount of padding, for the reasons set out above, and with the exception of the central area 2', the sections 2 extend parallel to the shoulders thereby facilitating applying the device by bending the same from the chest and over the shoulders onto the back. The sections at the lateral extremities of the device are far less cushioned, padding being reduced in all directions outwardly. The separate

sections 3 on the front and back parts are made slightly conical.

The numeral 4 indicates the securing bands which are sewn to the inner side of the conical sections or to their seams and which when tied in pairs around the body press the swimming vest firmly against the body. At 5 are indicated two rings for securing a food container on the chest portion of the vest.

In the form of construction shown in Fig. 2 the sections 2'' on the chest are more heavily padded with buoyant material than the sections 6 behind so that the swimming vest has a pronounced front. The lateral extremities of the front are shorter than those on the back part, the latter being arranged to bear against the sides and front of the body. As mentioned above, an inclined position of the body in the water, due to the greater mass of buoyant material in front achieved by the described arrangement, is thus obtained so that the mouth of the wearer is at a high level.

The special construction for divers and for submarine crews, shown in Fig. 3, corresponds substantially with the form described with reference to Fig. 2 but with the difference that two central sections 7 are provided which are filled with air or oxygen and are connected to each other by a tube 8 so that an equal quantity of gas is withdrawn from both sections 7 through the breathing tube 8' and the position of equilibrium remains undisturbed. The weights 9 are for the purpose of diving and for remaining some time under water, as also for enabling a slow rising in the water to be effected, without separate auxiliary appliances. When the device is used for submarine crews the weights can be detached separately one after the other so as to enable slow and gradual rise through the water. Instead of the securing bands, belts 10 and buckles 10' are preferably used in this and other forms of construction. 11 indicates a mouthpiece with two short rubber tubules for the nostrils of the nose which permit of breathing under water through the mouth and nose.

The form of the device especially for aviators who fly over the sea, is provided in the back part 12 with a recess for a parachute which is secured in place by means of strong bands 13 and rings 14, the device being otherwise free in the said non-cushioned recess, where it is prevented from falling out by a loose layer of fabric 15 and by two layers of fabric 17, capable of being drawn back in the manner of curtains by means of cords 16. Naturally instead of cords 16 there may also be provided a binding device for the parachute which opens automatically when jumping off. In this construction the pilot jumps off over water with the parachute, wearing the swimming vest secured to the parachute as described, the vest being held in position by strong bands 18 and 18', sewn to the interior of the swimming vest. The bands pass through the rings 14 and under the armpits of the aviator, whilst the ends 19 and 19' pass crosswise through the crutch and are then connected together. The weight of the person thus acts substantially as a pull on the upper limbs. When the aviator has parachuted to the surface of the water, he releases himself from the parachute by opening a spring catch hook which connects the parachute to the band system 13. The arrangement of the padding is different in this example in that it extends throughout and the opposite sides thereof are connected together at spaced intervals.

The division of the swimming vest, according to the invention, into three main parts enables it to be folded together easily and tied by means of the extending bands and inserted conveniently into a bag 20 as shown in Fig. 5.

The simple helmet shown in Fig. 6 has the feature that because of the heavy padding of the rear sections 2', both at the head and neck parts of the helmet, remaining a long time in the water in a reclining position with the head raised out of the water is facilitated.

The helmet shown in Fig. 7 differs from that shown in Fig. 6 by the inclusion of cheek and ear protectors, and also by the provision of an air supply in the head part 22 of the helmet. This air supply which is withdrawn through the tube 23 suffices for a few moments of submersion. However, the main purpose of the air container 22 is to withdraw breathing air from a level above the water level, the valve 24 serving to prevent water from entering the container 22 and the mouth.

The food storage container 25 shown in Fig. 8 consists of a padded frame into the recesses of which there are fitted flasks 26 and boxes 27, beverages, medicines, signals and food. The button fasteners 5' are connected to the rings 5 of the vest. For adapting the cushioning of the swimming vest, which is thicker towards the neck, the parts 25' located in the vicinity of the waist are not only made thicker than the parts 25'' located in the vicinity of the neck, but the containers are made to conform with the varying thickness. The padding of the frame balances the additional weight of the containers. A sleeve 28 with a slot 29, capable of being buttoned, prevents the containers from falling out of the frame 25. It is itself secured to the frame 25 by buttons 30.

From Figs. 9 to 12, showing the device as worn, there is shown particularly clearly how the cross section of the sections increases conically, from the waist towards the shoulders, Figs. 11 and 12 show how the ballast weights are arranged for convenient detachment and their equal distribution around the waist zone.

In its various combinations with a helmet, a parachute, a breathing device, ballast weights, and a food container, the life saving equipment according to the invention affords for the first time a complete protection for the various persons by whom it is worn under different circumstances when remaining in the water for a length of time.

The known arrangements, such as life belts and so forth are in no way suitable for being combined with these additional protecting and life saving appliances described herein. Further, only a construction of the swimming vest according to the invention enables the vest to firmly embrace and protect the upper part of the body and ensure a satisfactory location of the centre of gravity of the body in the water, while ensuring absolute freedom of movement of the limbs, and while combined with such additional articles of equipment.

I claim:

1. In a swimming and life-saving jacket of the type which involves a middle part to lie over the shoulders and having a head opening to pass the head of the wearer and depending front and rear parts adapted to cover the front and back and extend around the sides of the wearer and be secured in place thereon; the combination of

suspending rings secured to the top of the middle part of the jacket at opposite sides of the head opening, straps secured to other parts of the jacket and passed laterally outwardly through the rings in the form of flexible loops extending over the sides of the said middle part and through which the arms of the wearer are passed to engage the loops under the arm-pits of the wearer.

2. In a swimming and life-saving jacket of the type which involves a middle part to lie over the shoulders and having a head opening to pass the head of the wearer and depending front and rear parts adapted to cover the front and back and extend around the sides of the wearer and be secured in place thereon, rings secured to the top of the middle part of the jacket at opposite sides of the head opening, straps secured to other parts of the jacket and passed laterally outwardly through the rings in the form of flexible loops extending over the sides of the said middle part and through which the arms of the wearer are passed to engage the loops under the arm-pits of the wearer, and crotch straps secured to the front and rear parts of the jacket and arranged to pass between the legs and to be tightened in opposition to the suspension loops so as to secure the jacket snugly on the wearer while the jacket and the wearer are suspended by said suspension rings and at other times.

3. A swimming and life-saving jacket comprising a middle part having a head opening, said middle part being shaped to conform with declining surfaces of the chest and back of the wearer, and front and rear parts shaped to conform to the lateral curvature of the front and back and sides of the body of the wearer, said middle and front parts having a first vertically elongated buoyant section in a centralized position thereon and extending forwardly from said head opening and downwardly along said middle part and said front part, and a second vertically elongated buoyant section extending rearwardly from said head opening and centrally down along said middle part and said rear part, said vertically elongated centralized sections comprising breathable gas containers, and breathing means connected thereto for use by the wearer of the jacket.

4. A swimming and life preserver jacket characterized by flexibility throughout and conformability to the body of the wearer in a downwardly tapering form when in place, said jacket comprising a middle part to lie over the shoulders and the upper portions of the chest and back of the wearer and provided with a head opening to pass the head of the wearer, and front and rear parts depending from the front and rear extremities of said middle part to the region of the waist of the wearer, said front and rear parts being substantially wider than the middle part so that said front and rear parts can be wrapped around the body of the wearer and secured with their lateral extremities overlapped at the sides of the wearer, said middle and front and rear parts being composed of bulbous sections flexibly connected together, buoyant means distending said bulbous sections, the cross section of the bulbous sections diminishing toward the outer edges of the said parts so as to be sufficiently feathered to provide for conformability to the body and unbulky junctures where the said parts are overlapped, a majority of the bulbous sections composing the middle part being elongated in shape and arranged crosswise of the middle part and the majority of the bulbous sections composing the front and rear parts being elongated in shape and extending vertically from the lower to the upper edges of said front and rear parts, some of the crosswise extending bulbous sections of the middle part being substantially larger in cross section and content of said buoyant means than any of the other bulbous sections comprising the jacket to assure an upright position of the wearer in the water, said middle part including centralized bulbous buoyant sections running forwardly and rearwardly from the head opening, said centralized sections containing sufficient buoyant means to act in the water to reduce sidewise tipping of the wearer of the jacket.

5. A swimming and life preserving jacket, as recited by claim 4, wherein said centralized sections have portions extending centrally down along the front and rear parts of the jacket, the buoyant means in said centralized sections consisting of breathing gas with breathing tubes connected with and extending from said centralized section for use by the wearer of the jacket.

RAFFAELE CASELLE.