

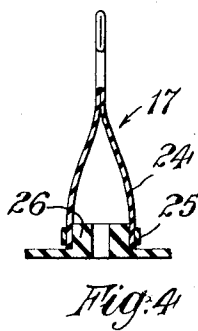
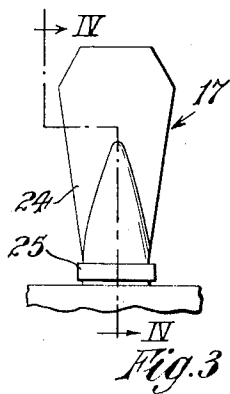
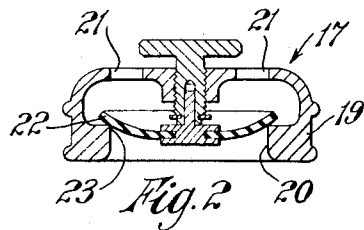
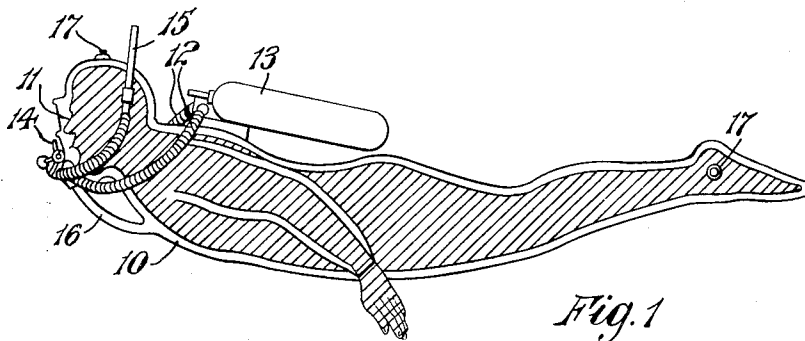
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INFLATABLE UNDERWATER SWIMMING AND DIVING SUITS

Filed June 21, 1960



INVENTORS

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INFLATABLE UNDERWATER SWIMMING AND DIVING SUITS

Geoffrey Bould, Heald Green, England, assignor to Dunlop Rubber Company, Limited, a British company
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Claims priority, application Great Britain June 23, 1959
1 Claim. (Cl. 2—2.1)

This invention relates to inflatable underwater swimming and diving suits. Such suits are formed from thin and flexible material, which fits closely to the body of the diver, and have means for inflating them so as to prevent the tendency of the external water pressure to collapse the suit when the diver is submerged which may lead to discomfort or injury to the diver. In my co-pending patent application Serial No. 37,742, filed June 21, 1960, I have described a suit of this kind in which means are provided for enabling the diver to breathe into the suit so as to inflate it.

With such suits it is normal to provide in the upper part, for example in the shoulder region or, if the suit includes a hood, on top of the hood at least one relief valve which will permit air to escape from the suit if the internal air pressure exceeds the external water pressure by a predetermined amount. The valve may be of the simple rubber flap or tongue type, or it may have a spring-loaded closure member. Thus the suit is retained at substantially constant volume regardless of the water pressure. However, if the diver swims in a horizontal or slightly inverted position there is a tendency for the air contained in the suit to move into the region of his feet and this may render it difficult or even impossible for him to revert to his normal swimming position.

The invention provides an inflatable underwater swimming or diving suit which includes at least one relief valve in the upper region of the suit and also relief valves in ankle or foot portions of the suit.

With this arrangement, if the diver swims in an inverted or partly inverted position the excessive build-up of inflating air in the foot and ankle regions of the suit will be released by the relief valves there situated so that the buoyancy produced in the leg or foot regions cannot reach a value sufficient to prevent the return of the diver to his normal swimming position.

Preferably the relief valves in the ankle or foot region are arranged to open at a lower pressure than the relief valve or valves in the upper region of the suit so that air will be released at a lower pressure when the diver is in the inverted position than when he is in the normal position. This ensures that if a diver whose suit is in equilibrium in his normal swimming position changes to an inverted position, air will immediately be released by the relief valves in the ankle or foot regions of his suit so as to render even more remote the chance of his being suspended in the inverted position.

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The relief valves may be spring loaded or of the simple rubber tongue or flap type, the springs or the resilience of the rubber being set so that the valves open under pressures predetermined to give satisfactory conditions to the diver when submerged, either in the normal or in the inverted position.

The invention will now be described in more detail, by way of example, with reference to the accompanying drawing in which:

FIGURE 1 is a diagrammatic sectional view showing a diver wearing an inflatable suit,

FIGURE 2 is a longitudinal section through one form of relief valve,

FIGURE 3 is a side elevation of an alternative form of relief valve, and

FIGURE 4 is a section on the line IV—IV in FIGURE 3.

The diving suit 10 shown in FIGURE 1 includes a hood 11 which is connected by breathing tubes 12 to an air bottle 13. By turning a cock 14 the diver can draw air from a surface breathing tube 15 instead from the bottle 13, so enabling the diver to conserve his air when swimming near the surface. The diver is also able to exhale air through a tube 16 into the interior of the suit 10 in order to inflate it. Relief valves 17 are provided in the hood and also near each ankle of the suit.

The relief valves may be of the construction shown in FIGURE 2 and include a casing 19, having an aperture 20 for communication with the air space in the suit and apertures 21 through which water can enter the casing, and a rubber diaphragm 22 which is normally held by the water pressure against a seat 23. As will be clear, when the air pressure in the suit exceeds the external water pressure, the diaphragm 22 can lift to permit of the escape of air from the suit.

In the alternative construction of relief valve shown in FIGURES 3 and 4, the valve includes a rubber bag 24, the mouth of which is normally held by a rubber ring 25 over a tubular rubber spigot 26 fixed to the suit. When the air pressure in the bag 24 exceeds a predetermined value, the mouth of the bag will expand to permit air to escape from the suit.

Having now described my invention, what I claim is:

An inflatable underwater suit which includes at least one relief valve in the upper region of the suit and also one relief valve in each of the lowermost portions of the legs of the suit, the latter being arranged to open at a lower pressure than the relief valve or valves in the upper region of the suit.

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