

[54] DIVER'S WEIGHT BELT

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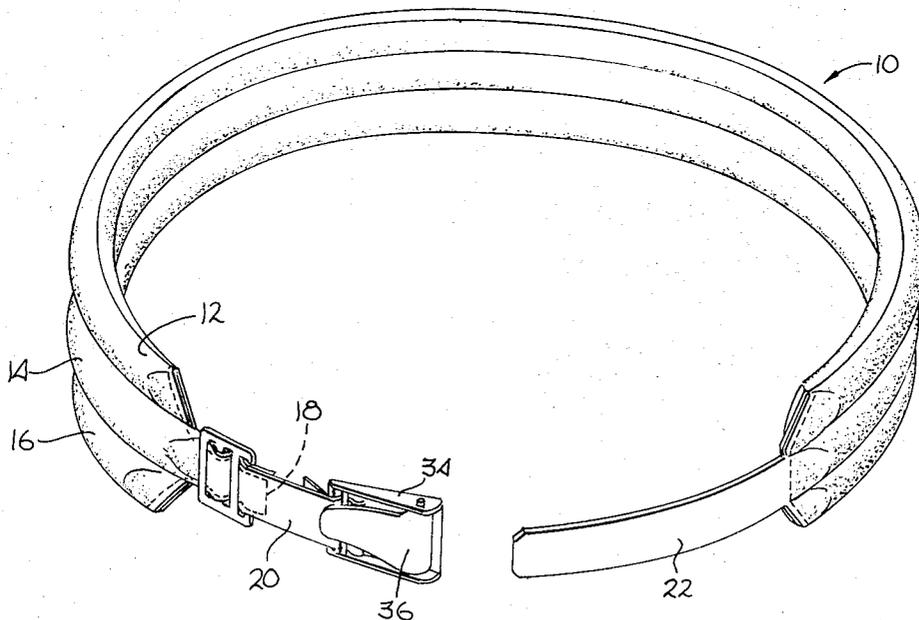
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[57] ABSTRACT

A weight belt for underwater divers comprising a plurality of connected elongated substantially circular in cross-section tubular compartments for containing lead weights, the compartments of the belt are formed of a flexible high strength cloth type of material, the length of the compartments are to extend in front of one hip of the wearer and around the back of the wearer and to the front of the other hip, the ends of the belt are joined together by a buckle assembly including a strap on one end and a safety type buckle on the other end.

1 Claim, 7 Drawing Figures



DIVER'S WEIGHT BELT**BACKGROUND OF THE INVENTION**

The field of this invention relates to weight devices to be employed to overcome the buoyancy force of water and more particularly to a weight belt for use by skin divers to compensate for the buoyant effects for their equipment.

The problem of buoyancy has long been of great concern to divers. In the past, where the diver was completely enclosed in a pressurized suit, the problem of weight was not so acute since it was not intended that the diver be able to move about too readily. In such instances, heavy shoes or large pieces of lead were attached to the diver's suit to overcome the buoyant effect of the air in the suit and the other equipment.

With the advent of self-contained underwater breathing apparatus, where the diver is extremely mobile in the water and ordinarily must have his legs free for swimming, the problem of ballast has become more acute. The underwater breathing apparatus is ordinarily compensated to produce neutral buoyancy, but there still remains the problem of the buoyancy of the diver's wet suit. It is necessary in many waters for divers to wear tight-fitting rubber suits for warmth and protection in order to endure prolonged exposure. These suits consist of a relatively thick layer of cellular rubber, and therefore are quite buoyant. An adult male diver fully suited, equipped with neutralized breathing apparatus, may require an additional weight of 16 to 22 pounds for sea water.

The customary method used by skin divers for applying weights to their body is to attach a belt about the waist to which are secured a number of large cast lead weights. These weights are cast and sold in a few standard sizes and the diver ordinarily buys several so that the total weight exceeds the amount of ballast he will require. He then adjusts the ballast by slowly paring off some of the lead from the blocks until he achieves neutral buoyancy in the water at the desired depth. Ordinarily, two or more such blocks are used forming rather large square chunks of lead which are spaced around the diver's waist. The casting of these large chunks of material in a form by which they can be attached to the diver's belt adds considerable expense to the initial cost of the lead itself. In addition, a considerable amount of lead may be wasted when the diver cuts down the size of the blocks to the desired weight.

It will be obvious that having once adjusted the weight of these blocks, it would be difficult for the diver to change the weight in small increments as he may desire to do if his weight changes, or if he desires to wear only a portion of his rubber suit, or if he desires to dive in fresh water. A further disadvantage of these large blocks of lead is that they are not only uncomfortable to wear, but can cause injury to the diver. The weight is concentrated at a few points around the waist of the diver. When he is out of the water, they can be quite uncomfortable. When the diver descends below the surface, the pressure on the wet suit causes the suit to compress and at greater depths this compression becomes pronounced. This compression does not affect the weight of the belt and thus the belt becomes loose around the diver's waist and ordinarily will move upwardly under the arms. In such a position, the large blocks of lead shifting under the arms frequently make

swimming difficult or uncomfortable and may injure the diver by coming in contact with his hip bones, elbows, or ribs. They also bang on the tank, attracting attention and alerting fish in the area.

A further disadvantage of the weight belts used heretofore is during transporting of the belt prior to or after use, the large block of lead can readily cause damage to an automobile if dropped thereon. Also, injury to humans is quite common upon the diver dropping the weight belt upon one of his feet. Additionally, divers are careless in their treatment of the belt, usually throwing the belt into a bag or letting the belt drop onto a boat deck, such careless treatment frequently causing damage to face masks, compass and other equipment in the vicinity.

SUMMARY OF THE INVENTION

The diver's belt of this invention is to be formed of a plurality of substantially circular tubular elements connected in a side to side manner, the tubes to be formed from a high strength cloth-like material (such as loose weave nylon), the length of the tubular elements being not sufficient to form a continuous circle but only extend around the wearer from in front of one hip and around in back to in front of the other hip. Straps are connected to the ends of the tubular elements and are capable of being joined together in front by means of a quick release buckle, one of the straps having an attachment capable of permitting withdrawal or addition of a portion of the lead shot contained within the tubes.

One of the objects of this invention not readily apparent from the foregoing is that by the belt being formed exteriorly of a cloth-like material, the belt does not produce noise or damage upon contact with foreign objects such as tanks, face masks, training class floors and boat decks.

Another object of this invention is to provide even distribution of the weight of the belt, so that it is more comfortable for a diver to wear.

Another object of the belt of this invention is that the lead shot may be readily removed from the end of one of the tubes facilitating submerged adjustment of the ballast.

Another object of this invention is that the belt can be easily manufactured thereby limiting its cost of manufacture and sale to the consumer. Further, the lead shot is more readily available for purchase than specially designed diver's weights.

Another object of this invention is that the belt is readily flexible and as a result can be easily stored during non-use.

Another object of this invention is to provide a weight belt that conforms to the human body and has no projections to catch on lines or underwater obstacles.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a perspective view of the diver's belt of this invention;

FIG. 2 is a cut-away front view of the diver's belt of this invention showing in more detail the buckle assembly of this invention;

FIG. 3 is a partly-in-section view of the belt of this invention taken along line 3—3 of FIG. 2;

FIG. 4 is a sectional view of the tubular elements of this invention taken along line 4—4 of FIG. 2;

FIG. 5 is a sectional view of the tubular elements of this invention taken along line 5—5 of FIG. 2;

FIG. 6 is a partly-in-section view of the belt of this invention showing the belt in the position to receive or withdraw lead shot; and

FIG. 7 is a partly-in-section view of the belt of this invention taken along line 7—7 of FIG. 6.

DETAILED DESCRIPTION OF THE SHOWN EMBODIMENT

Referring particularly to the drawing there is shown a diver's belt 10 being formed of a plurality of tubular elements 12, 14 and 16. Tubular element 14 is the center element and has an open end 18, the function of which will be explained further on in the specification. Each of the tubes 12, 14 and 16 is substantially circular in cross section and is formed by the sewing of a solid piece of material. However, it is to be understood that any other method of construction could be employed and still be within the defines of applicant's invention as by forming the tubes 12, 14 and 16 from different sections of material. Also, the material of construction should be a high strength synthetic fiber fabric such as loose weave nylon; however, applicant does not desire to be limited to such a fabric.

End 18 of the center tube 14 is securely attached to a first strap 20 with the other end of tube 14 being securely attached to a second strap 22. The straps may be attached by sewing or other means to the tubular portion, but may also be integral with the fabric backing of the belt. A buckle 24 is employed upon strap 20 and functions to close end 18 to prevent removal of lead shot 26 from tubes 12, 14 and 16. Each of the tubes 12 and 16 also contain lead shot 26 and have a common opening with the end 18 of tube 14, it being the stitching between the tubes does not extend to the ends of the tubes but stops short as at 13 and 15. As a result, the opening in end 18 permits removal from or addition of lead shot to each of the tubes 12, 14 or 16. The buckle 24 has a plurality of openings 28, 30 and 32 aligned in series. The end 18 and strap 20 is weaved successively through the openings 28, 30 and 32 and because of the binding action of the weaved strap 20 and end 18 the buckle 24 functions as a closure for end 18 of the tube 14 and then also closes tubes 12 and 16.

Attached to the end of strap 20 is a second buckle 34 which has a pivotable latch 36. Latch 36 when in the open position permits passage of strap 22 between it

and the buckle 34. With the latch 36 in the position shown in the drawing, the strap 22 is bindingly held between the latch 36 and the buckle 34. This buckle is commonly known as a quick release safety buckle and is similar to that on aircraft seat belts.

A diver prior to submerging will place the belt about his hips exteriorly of his wet suit and cause strap 22 to be bindingly held by latch 36 so that the belt 10 is snug about his waist. After the diver is submerged, if the belt has more weight than is needed to just overcome the buoyant force of the water, the diver only need to loosen buckle 24 and move it beyond end 18 upon strap 20, permitting removal of lead shot 26 from tube 14. When the desired buoyancy is achieved, the buckle 24 is again moved in binding position upon end 18.

What is claimed as new in support of Letters patent is:

1. A belt for a diver to wear about his waist upon being submerged in water, said belt comprising:
 - a plurality of substantially circular in cross section tubes connected together along their longitudinal length, each of said tubes to retain lead shot, the length of said tubes being sufficient to pass from in front of one hip behind the back of the wearer to the front of the other hip;
 - a first strap being continuous with one end of said tubes, a second strap being continuous with the other end of said tubes, a first buckle fixedly secured to the said first strap with said second strap temporarily securable to said first buckle to place in a snug fitting manner said belt about the diver's waist; and
 - a second buckle located upon said first strap, said tubes having an access opening therein to permit removal of lead shot contained therein, said second buckle having a plurality of spaced apart openings, said first strap being weaved successively through said spaced apart openings, said second buckle to close said access opening and prevent removal of lead shot contained within said tubes; said tubes comprising at least a first tube and a second tube and a third tube, said second tube being located between said first and third tubes, said access opening being directly connected to said second tube, said first and third tubes having connecting openings therein to communicate with said second tube, said connecting openings of said first and third tubes located directly adjacent said access opening.

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