Aug. 2, 1966 D. F. MASKELL 3,263,432

BALLAST WEIGHT CARRYING AND RELEASING MEANS

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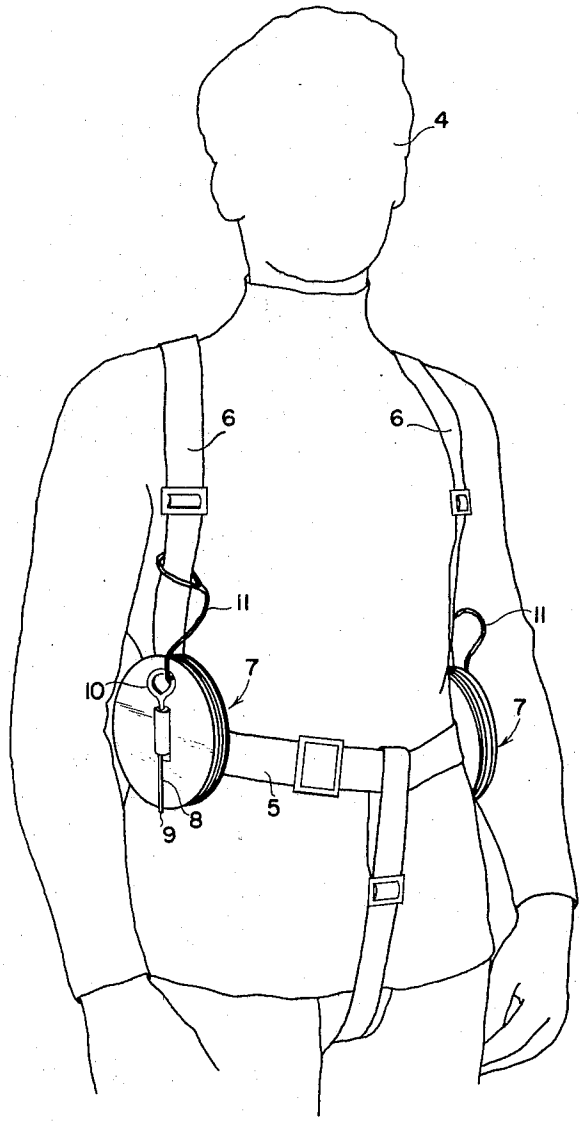


FIG. 1

INVENTOR

DENNIS FORD MASKELL

BY Larson and Taylor

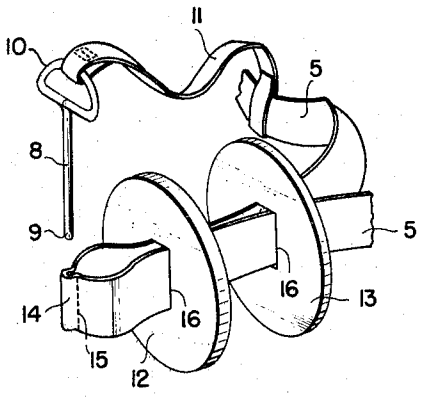
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FIG. 2



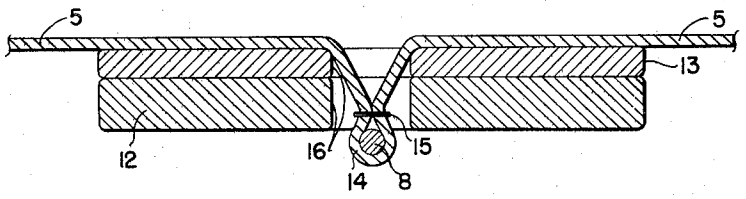


FIG. 3

INVENTOR

DENNIS FORD MASKELL

BY Larson and Taylor

ATTORNEYS

United States Patent Office 3,263,432 Patented August 2, 1966

3,263,432

BALLAST WEIGHT CARRYING AND RELEASING MEANS

Dennis Ford Maskell, Yeovil, England, assignor to Normalair Limited, Somerset, England

Filed Mar. 26, 1963, Ser. No. 268,029
Claims priority, application Great Britain, Mar. 29, 1962, 12,004/62
4 Claims. (Cl. 61—70)

This invention relates to improvements in or relating to apparatus for the carrying of ballast weights by underwater swimmers.

The majority of individuals are buoyant in sea water to the extent of 3 to 5 lbs. Depending on the buoyancy of the breathing set and other equipment the diver will require ballast weights in order to produce a state of neutral buoyancy. These ballast weights have in the past been carried in a belt around the waist of the swimmer, pockets being provided in the belt to allow for adjustment of ballast by insertion or removal of lead weights. This method has two main disadvantages, one being that the release of the belt is not easily accomplished in an emergency when the swimmer wishes to reach the surface as quickly as possible. The other disadvantage of the belt is that when an underwater swimmer wears a "wet" or "dry" suit for protection against the cold the hip contour of the swimmer tends to disappear so that the ballast belt can slip around the legs of the swimmer and cause obstruction of movement. One way to avoid this eventuality is to excessively tighten the belt with the possibility of causing discomfort to the swimmer.

It is an object of the present invention to provide a method of retaining ballast weights to an underwater swimmer such that the weights may be easily released in an emergency.

It is another object of the present invention to provide a method of retaining ballast weights to an underwater swimmer such that there is no risk of the weights sliding off the body of the swimmer.

According to the present invention I provide a quick release ballast weight device for use in diving operations comprising an elongated flexible member which is folded upon itself to form a loop in a portion between its ends, one or more ballast weights each having a hole therein of a size suitable to freely receive the loop, a pin adapted to be inserted into the portion of the loop projecting through the weight or weights, the arrangement being such that said weight or weights are retained until said pin is removed from said loop.

Other objects and advantages of the invention will become apparent from the preferred embodiment now described with reference to the drawings in which:

FIGURE 1 is view of an underwater swimmer wearing a harness with ballast weights attached according to the present invention.

FIGURE 2 is a view showing the relation of each part during the fitting of the ballast weights to a belt.

FIGURE 3 is a sectional view taken in a horizontal plane through the ballast weights and belt as they would appear when in use.

Referring to FIGURE 1, an underwater swimmer **4** wears an elongated flexible member shown as a weight belt **5** which in this embodiment forms part of a harness **6**

used to carry one or more high pressure air cylinders (not shown). The belt **5** carries on either side of the swimmer a number of ballast weights shown generally at **7**. A quick release pin **8** is provided for each set of weights **7**. The quick release pin **8** is manufactured from stainless steel and has a tapered end **9**. The other end of the pin **8** is provided with an eye **10** into which a finger can be inserted. The eye **10** has attached thereto a lanyard **11** which is anchored to a suitable part of the belt or harness.

Referring to FIGURE 2 there are two ballast weights shown, the weight **12** at the outside may for example weigh 4 pounds and the inside weight **13** may weigh 2 pounds. The belt **5** has a loop **14** permanently formed for example by a row of stitching **15**, or the like. Each of the weights is in the form of a disc and is provided with a rectangular hole **16** through its centre. The long side of the rectangular hole **16** is slightly longer than the width of the belt **5**. The width of the hole **16** is sufficient to allow the loop **14** to pass easily therethrough.

FIGURE 3 shows the ballast weights **12** and **13** as they would be held when the belt **5** is in tension around the swimmer's body.

When an underwater swimmer is preparing for a dive he selects a number of weights **7** and some of these are passed over each loop **14**. The quick release pin **8** has its tapered end **9** inserted into the loop **14** and the belt **5** is fastened around the waist of the underwater swimmer **4**. The row of stitching **15** may be omitted from the belt but is used in this preferred form of the invention. The stitching **15** prevents the weights **7** sliding forwards when the swimmer is moving horizontally with his face downwards by preventing the belt **5** from moving relative to the pin **8**. The total weight of ballast required by an underwater swimmer depends upon the amount of equipment worn and the present invention allows for adjustment of total weight by adding or subtracting ballast weights.

In an emergency the underwater swimmer **4** may desire to surface quickly and the only action required from the swimmer is to pull the quick release pins **8** or, alternatively, the lanyards **11**, the ballast weight will then fall freely away.

In another embodiment (not shown) the two quick release pins **8** may have their eyes **10** connected to a single cord such that the pins **8** may be pulled out simultaneously in one operation by the swimmer.

While the preferred embodiments of this invention have been described in a form as applied to a harness it is to be understood that the principle may be applied to a single belt or length of webbing and in its form the belt may be retained about the waist of the swimmer by a simple halter around the neck thus avoiding the necessity for excessive tightening of the belt.

I claim as my invention:

1. A quick release ballast weight device for use in diving operations, comprising an elongate flexible member having a portion folded upon itself to form a loop between the ends of the member, a ballast weight having a hole therethrough, said loop passing freely through said hole in said ballast weight and projecting beyond the remote face thereof, and a pin member removably inserted through said loop and bearing against said remote face of said ballast weight to prevent retraction of the loop through said hole and consequent inadvertent release of said ballast weight from said elongate flexible member.

2. A quick release ballast weight device as recited in claim 1 wherein a plurality of ballast weights are provided, each having a hole therethrough, said weights being arranged in stacked relationship with the holes of adjacent weights in substantial alignment, and wherein said loop passes freely through the aligned holes and projects beyond the remote face of the remote ballast weight, said pin member bearing against the remote face of the remote ballast weight to prevent retraction of the loop and consequent inadvertent release of the weights, whereby said weights can be released collectively or selectively.

3. A quick release ballast weight device as recited in claim 2 wherein said flexible member is folded and fastened upon itself so as to make said loop substantially permanent.

4. A quick release ballast weight device as recited in claim 2 further comprising a body harness for supporting

equipment on the body of a diver, said elongate flexible member being connected to said harness to form a part thereof, and a lanyard-like flexible member for attaching said pin member to said harness.

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JACOB L. NACKENOFF, *Primary Examiner.*

EARL J. WITMER, CHARLES E. O'CONNELL, *Examiners.*

R. A. STENZEL, *Assistant Examiner.*