Jan. 17, 1961 E. W. EDMUND 2,968,159

COMBINED AIR TANK AND WEIGHT CARRIER

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Fig. 1

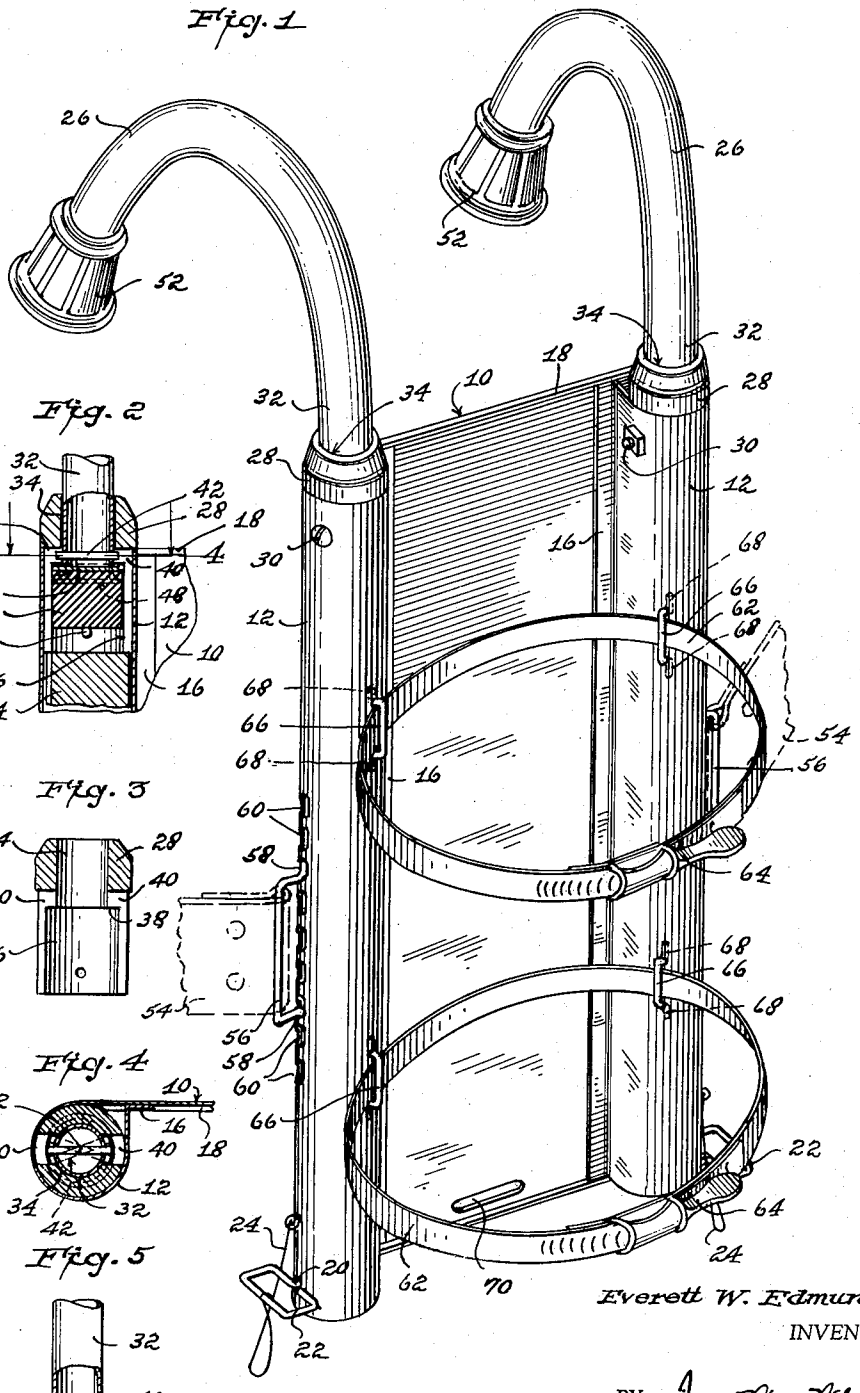
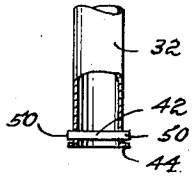


Fig. 2

Fig. 3

Fig. 4

Fig. 5



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Fig. 6

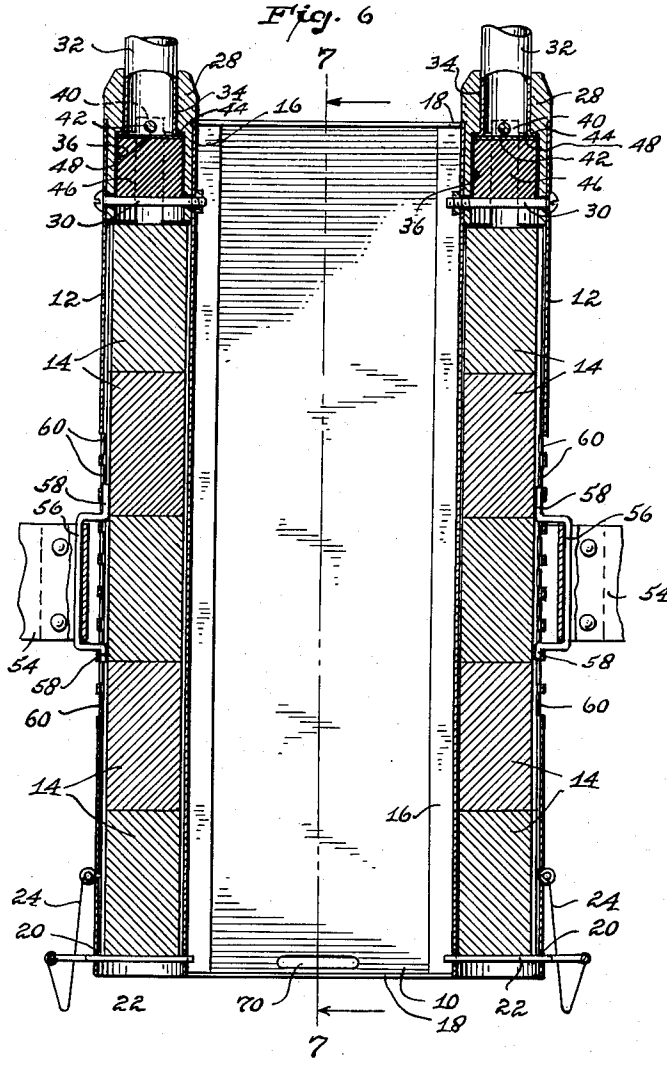


Fig. 7

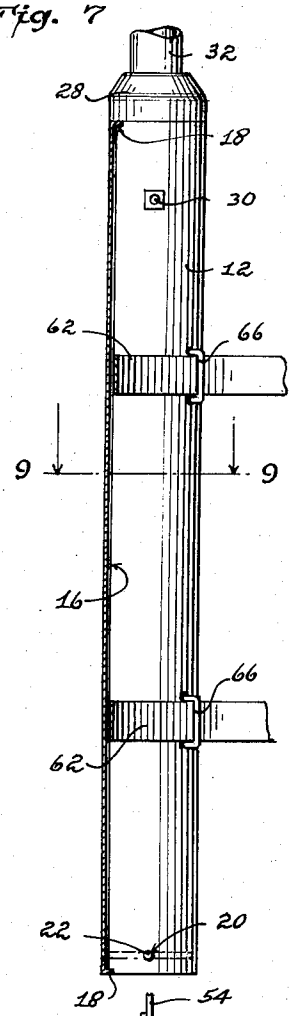


Fig. 8

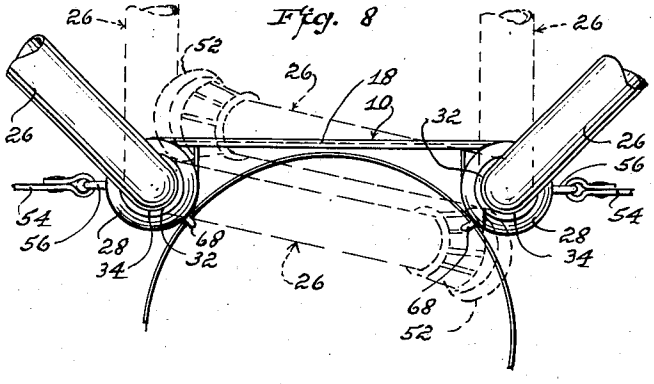
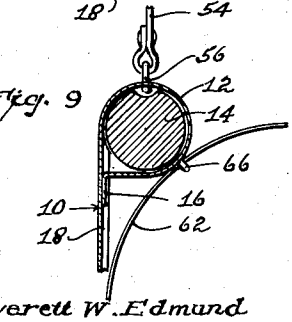


Fig. 9



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United States Patent Office 2,968,159
Patented Jan. 17, 1961

2,968,159

COMBINED AIR TANK AND WEIGHT CARRIER

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Filed Nov. 20, 1959, Ser. No. 854,470

10 Claims. (Cl. 61—69)

This invention relates generally to diving equipment and more particularly to improved equipment for carrying on a diver's back an air tank and weights as used in underwater activities.

One of the principal objects of the present invention is to provide an improved carrier made of light metal or other suitable stiff and durable sheet material, for an air tank and the weights used by the diver in underwater sports activities, although such equipment is equally adapted for us in any diving operations.

Another object of my invention is to provide equipment of the type mentioned having curved shoulder hangers, also of light metal or other suitable material, having a limited range of rotatability to accommodate shoulders of different widths.

A further object of my invention is to provide a carrier of the type mentioned in which the shoulder hangers may be folded upon the carrier into a compact form for transportation.

Another, and important, object of the invention is to provide a carrier of the type mentioned in which the supports of the belt for attachment to a human body can be adjusted to accommodate different waists.

A further object of the present invention is to provide a carrier of the type mentioned made from a single sheet of light metal or suitable sheet material.

A still further object of this invention si to provide a carrier of the type mentioned having simple and effective means for attaching an air or oxygen tank to the carrier.

Other objects and advantages of my improved underwater equipment will be apparent or pointed out in the following specification in which reference is had to the accompanying drawings forming a part thereof and in which:

Fig. 1 is a perspective view of one form of my improved carrier;

Fig. 2 is a sectional view through the upper end of one tubular portion of the carrier;

Fig. 3 is a sectional view of the bushing shown in Fig. 2;

Fig. 4 is a section taken on the line 4—4 of Fig. 2;

Fig. 5 is a view, partly in section, of the straight, depending portion of one of the shoulder hangers shown in Fig. 1;

Fig. 6 is a section taken through the tubular portions of the carrier parallel to the surface of the carrier plate;

Fig. 7 is a section taken on the line 7—7 of Fig. 6;

Fig. 8 is a fragmentary top plan view of the carrier shown in Figs. 1, 6 and 7; and

Fig. 9 is a fragmentary section taken on the line 9—9 of Fig. 7.

Referring to the drawings in which like numerals designate like parts in the several views 10 designates a vertical carrier for an oxygen tank and weights to be used by a diver. In the form of the invention illustrated, this

carrier consists of a single sheet of light metal, or other suitable material durable in salt or other water, which sheet is formed at its marginal vertical edges into tubular portions 12, for the slidable reception therein of cylindrical metal weights 14, which may be in relatively short sections to enable the diver to carry the total amount of weight necessary for the circumstances involved. The free ends of the sheet are formed into angular flanges 16 in parallel relation with the portion of the carrier between the tubular portions and rigidly secured thereto by welding, riveting or other suitable means, thus forming an entirely integral carrier. However, the tubular portions may, if desired, be formed separately and attached to the intermediate portion of the carrier by any suitable means. The extreme ends of the intermediate portion are preferably bent rearwardly at a right angle to form reinforcing flanges 18. Transversely aligned apertures 20 in the lower ends of the tubular portions 12 receive pins 22 to support the weights 14. The weights may be instantly dumped by withdrawing the pins, which may be anchored to the tubular portions by means of cords, chains or wires 24.

For supporting the shoulder hangers 26 (Fig. 1) bushings 28 are axially mounted in the upper ends of the tubular portions 12 and are rigidly secured therein by means of bolts 30 or other suitable means. The hangers 26 are curved at their upper ends to fit over the diver's shoulders, and have depending straight portions 32 by means of which the hangers are telescopically and rotatably mounted in the bushings 28. As shown in detail in Figs. 2 and 6, these respective bushings have outer bores 34 to fit the depending straight portions 32 of the shoulder hangers, these bores extending downwardly to enlarged bores 36 forming horizontal shoulders 38 (Fig. 3. Relatively wide slots 40 extend from these shoulders to a plane some distance above them. Transverse pins 42 on the straight portions 32 of the shoulder hangers 26 of substantially lesser diameter or width than the slots 40 have their ends projecting into these slots, thus permitting limited rotatability of the hangers 26 in either direction to accommodate shoulders of various widths or shapes.

The lower ends of the depending straight portions 32 of the shoulder hangers 26 may be provided with flanges 44 (Fig. 5) which engage the horizontal shoulders 38 and prevent withdrawal of the hangers 26 from the bushings 28. Resilient cylindrical cushions 46 (Fig. 2) are mounted in the enlarged bores 36 of the bushings, under compression between the flanges 44 and bolts 30 or other supports in the bushing with washers 48 interposed therebetween to normally hold the shoulder hangers 26 in their extreme extended positions, with the ends of the transverse pins 42 in the slots 40, so that limited rotatability of the shoulder hangers is permitted in angularly adjusting them to different shoulders. When it is desired to fold the shoulder hangers on each other, as indicated in broken lines in Fig. 8, the shoulder hangers 26 are forcibly depressed, as indicated in broken lines in Fig. 2 to bring the tops of the pins 42 downwardly into the enlarged bores 36 below the ends of the bores 34 and the shoulders 38, thereby permitting free rotation of the hangers to their folded positions, the projecting end portions 50 of the pins 42 (Fig. 5) being short of the walls of the enlarged bores. Metal compression springs (not shown) may be substituted for the resilient elements 46. The shoulder hangers 26 may be provided with resilient tips 52 (Fig. 1).

It should be here pointed out that although the bushings 28 have been described as being provided with opposed pairs of slots 40, and pins 42 projecting entirely through the depending straight portions 32 of the shoulder hangers, single slots in the bushings and single projections

on the portions 32 would suffice for the purpose described. Moreover, grooves in the bushings could satisfactorily be substituted for the slots 40. It should be further understood that the flanges 44 on the depending portions of the shoulder hangers may be omitted, in which case the pins 24 will prevent withdrawal of the hangers from the bushings 28.

As shown in detail in Figs. 1 and 6, adjustable means for attachment of a belt 54 consist of U-shape loops 56 having right angular extensions 58 at their ends and a plurality of apertures 60 arranged in longitudinal rows in the tubular portions 12 into selected pairs of which the extensions 58 are inserted. The apertures may be elongated and the upper extensions of the loops longer than the lower extensions, as shown more clearly in Fig. 6 to facilitate attachment of the loop. However, other suitable means of attaching the loops may be employed.

A pair of bands or rings 62 of conventional design, having tightening devices 64 for attachment to an air or oxygen tank, are installed on the tubular portions 12 by means of transverse and longitudinally spaced U-shaped loops 66 disposed in converging angular relation to each other, through which the rings extend. The loops are provided at their ends with right angular extensions 68 (shown in broken lines in Fig. 1) through which the rings extend.

At the lower end of the carrier 10 is a horizontal slot 70 for the insertion therein of a jock strap or the like for holding the hangers 26 against the shoulders of a diver.

In the event of an emergency necessitating that the diver rise immediately to the surface of the water the weights 14 can instantly be dumped from the tubular portions 12 by withdrawing the pins 22 from the apertures 20.

Various changes or modifications in my improved carrier may be made without departing from the spirit and scope of my invention. Therefore, it should be understood that the embodiment of my invention shown and described is intended to be illustrative only and restricted only by the appended claims.

I claim:

1. A combined air tank and weight carrier comprising a vertical, substantially rectangular plate having parallel tubular portions at its vertical edges for the slidable reception therein of metal weights, and means on the carrier for attaching thereto an air tank and a belt for securing said carrier to a human body; bushings rigidly mounted axially in the upper ends of said tubular portions, curved tubular shoulders hangers having depending straight portions telescopically and rotatably mounted in said bushings, coengaging means on said straight portions and said bushings for preventing withdrawal of said hangers from said bushings; resilient means in said bushings abutting the inner ends of said hangers for normally holding them in their extreme extended positions but permitting their forcible depression, said bushings and shoulder hangers having coengaging means for limiting rotatability of said hangers when in their extreme extended positions and permitting free rotation thereof to permit folding together of said hangers when in their depressed positions; and releasable supports for said metal weights in the lower ends of said tubular portions.

2. A combined air tank and weight carrier as in claim 1 in which the coengaging means of the bushings and the shoulder hangers include pairs of diametrically opposed, relatively short vertical slots in the respective bushings below their outer ends, said slots merging at their lower ends into enlarged bores forming horizontal shoulders below said vertical slots, radial projections on the depending portions of said hangers within said slots, said projections being of substantially lesser width than said slots to permit limited rotatability of said hangers when in their extreme extended positions, said radial projections also being of lesser length than the radius of said enlarged bores, said hangers being permitted free rotatability to a folded position when forcibly depressed against and resilient means to such a plane as to bring the projections on the depending portions of the hangers into said enlarged bores below the horizontal shoulders formed by said enlarged bores.

3. A combined air tank and weight carrier as in claim 1 in which the coengaging means on the straight portions of the shoulder hangers and the bushings consist of enlarged bores in the bushings below their outer ends forming horizontal shoulders therein, and radial abutments on the respective inner ends of said straight portions for engagement with said shoulders.

4. A combined air tank and weight carrier as in claim 1 in which the means for attaching a belt to the carrier consists of U-shaped loops having right angular extensions at their ends, the tubular portions of the carrier having a series of vertically spaced apertures in which said extensions are selectively inserted, thus providing adjustablity to said loops longitudinally of said tubular portions.

5. A combined air tank and weight carrier as in claim 1 in which the resilient means in the bushings abutting the inner ends of the shoulder hangers consist of resilient elements within enlarged bores of the respective bushings said elements being in contact at their upper ends with the depending straight portions of the hangers and at their lower ends with rigid supports on said bushings.

6. A combined air tank and weight carrier as in claim 1 in which the releasable supports for the weights in the lower ends of the tubular supports consist of pairs of transversely opposite apertures in the walls of the tubular portions of the carrier and removable pins inserted through said apertures.

7. A combined air tank and weight carrier as in claim 1 in which the means for attaching an oxygen tank to the carrier consist of U-shaped loops having right angular extensions at their ends, the tubular portions of the carrier having transversely and longitudinally aligned pairs of apertures in which the extensions of said loops are inserted, and including tank supporting ring members extending through said loops, said ring members having means for tightening them about a tank.

8. A combined air tank and weight carrier as in claim 1 in which the plates and the tubular portions thereof consist of single sheets bent at their vertical margins into tubular form, the respective free ends of the sheets terminating in narrow flanges parallel with and rigidly attached to one side of the plate.

9. A combined air tank and weight carrier as in claim 2 in which the radial projections on the depending portions of the hangers consist of pins inserted transversely through the respective depending portions with their ends projecting radially therefrom.

10. A combined air tank and weight carrier as in claim 1 in which the weights are in a plurality of relatively short sections to permit variation in the total amount of weight contained in the tubular portions of the carrier.

No references cited.