

E. J. VALEUR.
DIVING SUIT,
APPLICATION FILED DEC. 15, 1920.

1,420,640.

Patented June 27, 1922.

Fig. 1.

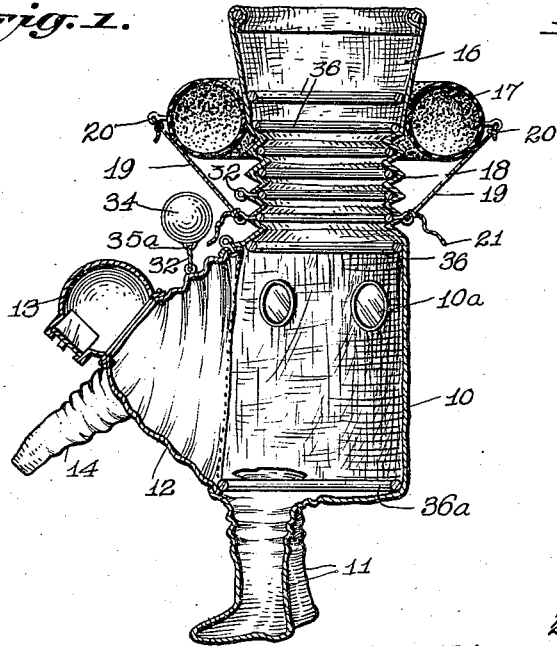


Fig. 2.

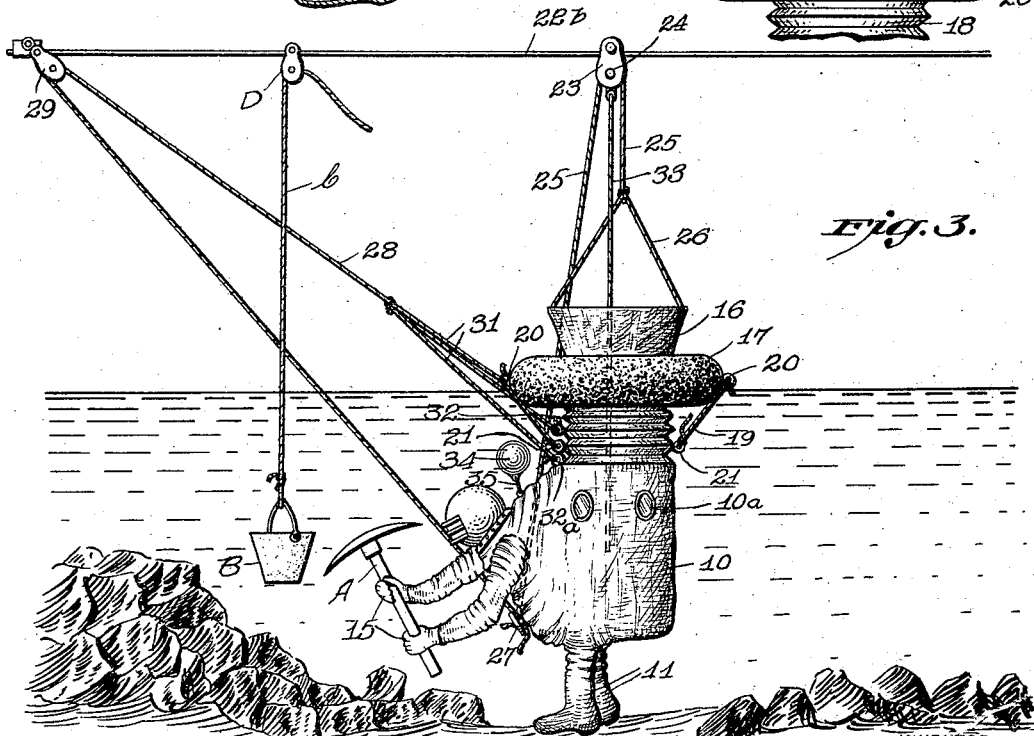
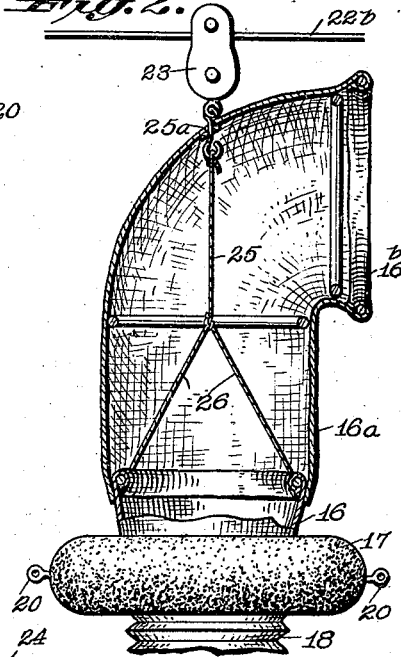
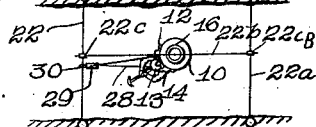


Fig. 3.

WITNESSES

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Fig. 4.



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DIVING SUIT.

1,420,640.

Specification of Letters Patent. Patented June 27, 1922.

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To all whom it may concern:

Be it known that I, EINAR JENSEN VALEUR, a citizen of Denmark, and a resident of Barahona, Dominican Republic, West Indies, have invented a new and Improved Diving Suit, of which the following is a full, clear, and exact description.

This invention relates to a diving bag of water proof material to be worn as a suit, and of a character to be used for example in shallow water, in rivers, in tanks, dams, etc.; for repairing or inspecting ships' hulls, about wharves, bridges, etc.; for prospecting or exploring rivers, lakes, and other water; for rescuing the drowning or recovering the bodies of drowned persons, and in other instances where an ordinary diving outfit is unpractical or too expensive, or involves too slow movements on the part of the user.

A general object of my invention is to provide a diving bag for the indicated purposes, and to be worn as a suit by the user in sub-surface activities, and of a character to permit freedom of movement on the part of the user in moving with the suit about his work, as well as to provide a suit with buoyant means to relieve the wearer of the weight of the suit.

A further object of the invention is to provide a diving bag of suit form in which the buoyant means will serve to maintain the suit with its open mouth above the water surface.

The stated objects and others as will appear, are obtained by the novel diving bag and its appurtenances hereinafter particularly described.

Reference is to be had to the accompanying drawing forming a part of this specification, it being understood that the drawings are merely illustrative of two practical examples of the invention.

Figure 1 is a vertical section of a diving bag embodying my invention in one form.

Figure 2 is a detail vertical section of the upper portion of the bag in modified form showing parts of overhead suspension and guiding means.

Figure 3 is an elevation of the bag with suspending, guiding, and controlling means with which the bag is equipped when used where there is a current.

Figure 4 is a diagrammatic plan view of the overhead wires.

My improved bag in the form shown in

Figures 1 and 3, comprises a body 10 provided with depending legs 11 to receive the legs of the user. On the body of the bag 10 at the side thereof, is a lateral extension 12; complementary to the bag, and of a size to accommodate the torso of the user, said extension having an aluminum or other suitable helmet 13 as well as sleeves 14, the sleeves in practice receiving exteriorly secured gloves 15 indicated in Figure 3 and secured in any effective manner.

The bag 10 has a neck 16 at the top through which the user may pass in entering, and in leaving the bag, the upper end of the neck advantageously being flared in practice. On the neck 16 slightly below the upper end thereof, is a buoyant ring 17 extending about the neck at the exterior, and in practice made in a continuous tubular form filled with cork or the like, or inflated. The buoyant device 17 has an effective buoyancy sufficient to maintain the open upper end of the neck 16 above the surface of the water, and sufficient at the same time to relieve the wearer of the weight of the body of the bag. The described construction and arrangement of the body of the bag accommodates the user below the neck 16 and insures air while under water and it guards against the flooding of the bag.

The lower portion 18 of the neck is given a bellows form or otherwise made readily extensible in response to the rising and falling of the upper end of the neck and the buoyant device 17, so that the neck accommodates itself to water of various depths within the limits of the bag of a given vertical dimension. In order to hold the buoyant device at a given adjusted height above the body of the bag 10 for water of a given depth, suitable fastening means may be employed, this being indicated for the purpose by ropes 19, each secured at one end to an eye 20 on the buoyant device 17, their other ends being secured to eyes 21 on the bag near the lower end of the extensible portion 18 of the neck 16.

My improved bag it is to be noted, is so formed that the bag possesses a suit character to respond to the movements of the user in his sub-surface activities.

The lateral extension 12 is flexible in all directions and sufficiently so for the wearer to reach with his hands the bed of the river or other body of water to be worked.

Under very favorable circumstances, the

suit may be employed without overhead suspension or guiding means, and without means to withstand the action of the current, but where the bed of a river is to be worked in a predetermined section, or over given areas in succession, the following instrumentalities are employed. Transverse wires 22, 22^a are strung above the river, for example to extend from shore to shore, one wire 22 being upstream, and a longitudinal wire or cable 22^b extends between the wires 22, 22^a. A block or other carriage 23 is mounted to travel on the wire 22^b up or down stream, and over a pulley 24 runs a suspension rope 25 one end of which is branched at 26, and suitably secured to diametrically opposite sides of the neck 16, the other end of the rope running downward to a cleat 27 on the body 10 of the bag adjacent to the extension 12, to be in convenient reach of the wearer of the bag with his gloved hands. Thus the bag worn as a suit may respond to the forward or backward movement of the user, the block or carriage traveling back or forth along the wire 22^b. At the same time the rope 25, 26 maintains the upper end of the bag above the water surface.

In order to relieve the bag of the action of the river current, a rope 28, the end of which is made fast if it is desired at the cleats 27, runs over a pulley on a block 29 suitably secured as at 30 to the upstream wire 22 adjacent to the longitudinal wire 22^b, the other end of the rope being made fast to the bag at or adjacent to the lower portion of the neck 16, there being a plurality of branches 31 on the other end of said rope 28 and secured to the bag, the one branch being shown as secured to the adjacent eye 20 on the buoyant device 17, and others extending to eyes 32, 32^a, the one on the extensible neck portion 18, and the other on body 10 of the bag adjacent to the base of the lateral extension 12. A safety rope 33 hangs from the block or carriage 23, and extends into the body of the bag 10 to be in convenient reach of the wearer that he may climb the rope in an emergency.

In order to relieve the back and neck of the wearer of the weight of the lateral extension 12, said extension in practice has a ball or other suitable float 34 secured to said extension by a suitable flexible connection 35. The body 10 of the bag will in practice have suitable windows 10^a, and also if desired rings 36 of wood or the like material may be fitted in the neck 16 at different elevations, certain of the rings being positioned in the bellows folds of the extensible neck portion 18. Additional rings 36, 36^a may be fitted in the bag body 10 at the top and bottom.

In Figure 2 I have shown an attachment 65 16^a forming an extension of the neck 16

and having its upper end 16^b laterally disposed so as to open away from the wind. In this case the described suspension rope 25 will extend through the laterally curving upper end of the attachment 16^a, there being shown a link 25^a extending through the material of the extension and secured respectively to the block 23 and rope 25.

While I have shown but one lateral extension 12 and a related pair of legs 11 on the body 10, it will readily be understood that any convenient number of these may be provided about the bag body 10. By the described construction it will readily be understood that the wearer of the bag has perfect freedom for his body and hands in the operation of a pick A or other tool, and also he may conveniently raise or lower the bucket B at the end of a rope C which runs over a pulley D traveling on the longitudinal wire 22^b.

Any suitable fastening means 22^c may be employed to secure the ends of the wire 22^b to transverse wires 22, 22^a.

I would state in conclusion that while the illustrated examples constitute practical embodiments of my invention, I do not limit myself strictly to the details herein illustrated since manifestly the same can be considerably varied without departure from the spirit of the invention as defined in the appended claims.

What I claim is:

1. A diving device for working in shallow water, adapted to be worn as a suit, to permit the wearer walking about while submerged, said device comprising a vertical body having a buoyant extension at the top, a lateral flexible extension complementary to the said body and adapted to accommodate the torso of the wearer, said lateral extension having a helmet for accommodating wearer's head, and flexible arm sleeves, said body having legs adjacent to and below said lateral extension adapted to receive the legs of the wearer when positioned either in the said body or partly in said lateral extension to permit of his walking in either position of his body.

2. A diving device for working in shallow water, adapted to be worn as a suit, to permit the wearer walking about while submerged, said device comprising a body having legs at the bottom, adapted to receive the legs of the wearer, and a flexible lateral extension adapted to accommodate the torso of the wearer, said extension having a helmet for accommodating the wearer's head, and flexible arm sleeves.

3. A diving suit in the form of a bag to be worn by the user to partake of his bodily movements, said bag having a body portion and a neck rising from said body portion to extend above the water surface, overhead suspension means attached to said neck por-

tion, and means on which the suspension means may travel in response to the bodily movements of the bag and wearer.

5 4. A diving suit in the form of a bag to be worn by the user to partake of his bodily movements, said bag having a body portion and a neck rising from said body portion to extend above the water surface, overhead suspension means attached to said neck por-
10 tion, and means on which the suspension means may travel in response to the bodily movements of the bag and wearer; together with means independent of the suspension

means to optionally relieve the bag of the action of the current when the bag is worn 15 in a stream.

5. The combination with a diving suit, a pair of spaced wires adapted to be positioned above a body of water, a longitudinal wire extending between said first-mentioned 20 wires, a traveler on the longitudinal wire, suspension means from the traveler to said bag, and optionally variable means forming a connection between the bag and one of said first mentioned wires.

EINAR JENSEN VALEUR.