H. STELZNER.

DIVING GEAR.

APPLICATION FILED JULY 6, 1917.

1,238,952. Patented Sept. 4, 1917.

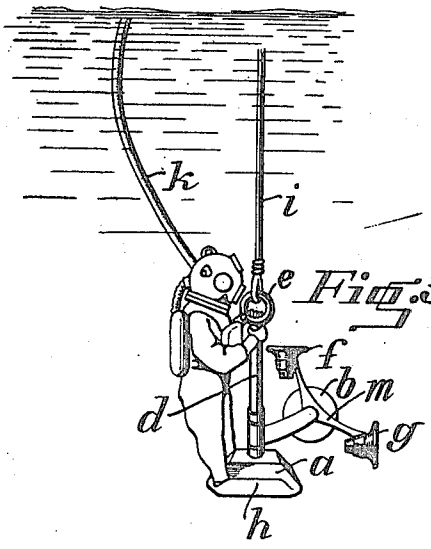
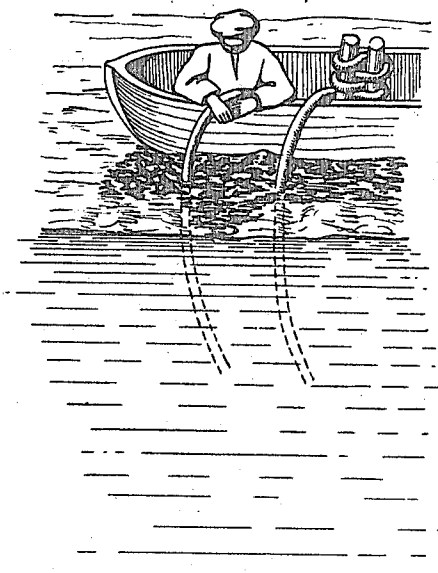


Fig. 3.



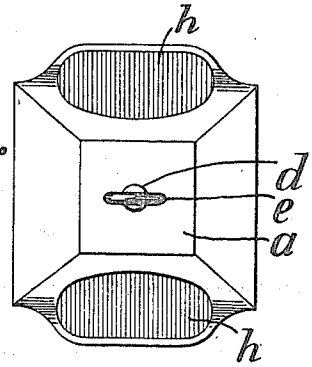


Fig. 2.

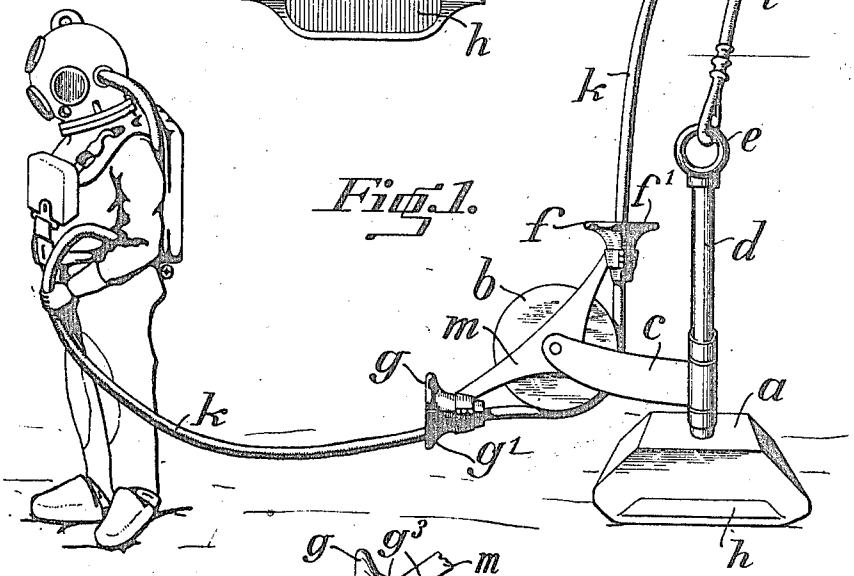


Fig. 1.

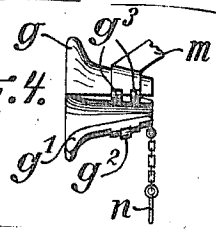


Fig. 4.

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UNITED STATES PATENT OFFICE.

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DIVING-GEAR.

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To all whom it may concern:

Be it known that I, HERMANN STELZNER, a citizen of the German Empire, residing at Lübeck, in the German Empire, have invented certain new and useful Improvements in Diving-Gear, of which the following is a specification.

At great depths of water there are generally strong currents which may be dangerous for a diver, as he is forced by such currents against the air supply tube, life line or telephone cable, and might even be forced up to the surface against his will, which would cause diver's disease (nitrogen poisoning).

This danger is obviated by the connections being carried over a weight lowered to the bottom of the water and not directly vertically to the diver below so that they lead from the weight to the diver in an approximately horizontal direction. It is true that the pressure of currents against a connection (tube, cable, etc.,) guided in this manner is also transmitted to the diver, but then it exercises chiefly only a pull in the horizontal direction which can not force the diver upward at all, or at least not in a dangerous manner. For if the diver should be forced upward to the surface he would have to be at a distance from the bottom weight, which will not generally be the case, but even if it is, injury to health can be avoided by again sinking him immediately by pulling in the life line guided over the weight.

It has hitherto been impossible to sink a diver who was suddenly forced up and who had a considerable buoyancy, without letting air out of the diver's dress. When the diver is sunk for the purpose described there is however the further danger that owing to insufficient counter pressure, the diver is crushed by the water pressure, in case that owing to faintness or weakness he is unable to use the valve in the helmet properly. In such a case it is necessary to keep a second diver ready for the purpose of helping the other diver. This measure of precaution is rendered unnecessary by the present invention. The diver forced up can be at once pulled down again, or pull himself down again in spite of the great buoyancy of his dress.

A construction of the diving gear forming the subject-matter of the invention is illustrated in the accompanying drawing in which—

Figure 1 shows the gear in use; Fig. 2 is a plan of the weight separately, the pivoted arm carrying the guide roller for the connection being removed; Fig. 3 explains the use of the weight during the hoisting up of the diver, and Fig. 4 is a detailed view on a larger scale showing one of the guide funnels in its opened position.

The deep diving gear comprises a weight *a* forming an anchor, preferably in the shape of a truncated cone and provided with a pivoted arm *c* carrying a guide pulley *b*. The arm *c* is rotatably mounted on a stem or stock *d* provided on the weight *a* and carrying at the free end a ring *e* for the anchor line *i*. For the purpose of guiding more satisfactorily the connection *k* (life line, telephone cable, air tube) which passes under the guide roller *b* and leads to the diver, there are provided in front and at the back of the guide roller *b* guide funnels *f* and *g* which preferably fold and through which passes the connection *k*.

In Fig. 4 I have illustrated a practical form of a foldable guide funnel composed of two halves *g* and g^1 in hinged connection with each other. After the cable *k* has been placed into the opened guide funnel the two halves *g* and g^1 are closed around the said cable and secured by putting a pin *n* through the registering eyelets g^2 and g^3. The guide funnel *f* is constructed in an analogous manner of two hinged halves *f* and f^1. The funnels *f* and *g* are held in correct position relatively to the roller *b* by means of a stay piece *m*. The weight *a* is provided at two opposite points with foot rests *h* on which the diver can stand when he is lowered or pulled up, together with the gear.

The method of using the deep diving gear will be clear without any further explanation from Fig. 1 of the drawing. If the diver is to be pulled up, he takes out the connection *k* from the funnels *f* and *g* and off the guide roller *b*, and stands on the foot rests *h* of the weight, at the same time holding with his hands to the stock *d* and the ring *e* in the manner shown in Fig. 3, or he attaches himself to the stem *d* by means of a large hook provided on a body belt so as to keep his hands free. The diver need not therefore hold on so firmly as with an ordi-

nary cable, so that any fatigue of the diver which is specially harmful when he is coming out, is avoided, and on the contrary he can make gymnastic movements of his limbs for accelerating expulsion of nitrogen gases from his body during the hoisting up.

I claim:

1. A diving gear comprising a weight arranged to be lowered to the bottom of the water, and guiding means for the diving tackle carried by said weight.

2. A diving gear comprising a weight arranged to be lowered to the bottom of the water, an arm pivotally carried by said weight, and a guide roller for the diving tackle rotatably mounted on said arm.

3. A diving gear comprising a weight arranged to be lowered to the bottom of the water, an arm pivotally carried by said weight, a guide roller for the diving tackle rotatably mounted on said arm and guiding funnels carried by said arm in coöperative relation to said roller.

4. A diving gear comprising a weight arranged to be lowered to the bottom of the water, a stem extending upwardly from said weight, means connected with said stem for lowering said weight, an arm rotatably mounted on said stem and a guide roller for the diving tackle carried by said arm.

5. A diving gear comprising a weight, means for lowering said weight to the bottom of the water, and foot rests on said weight for the diver whereby said weight may be used as a carrier for the diver.

6. A diving gear comprising a weight arranged to be lowered to the bottom of the water, guiding means for the diving tackle carried by said weight, and guiding funnels carried by said weight in coöperative relation to said guiding means, said funnels comprising sections hinged together and arranged to be opened to receive the diving tackle and closed to guide said tackle to said guiding means.

HERMANN STELZNER.