H. STELZNER.

DISTRIBUTION OF THE WEIGHTS ON DIVERS' SUITS.

APPLICATION FILED MAR. 26, 1915.

1,162,525. Patented Nov. 30, 1915.

Fig. 1.

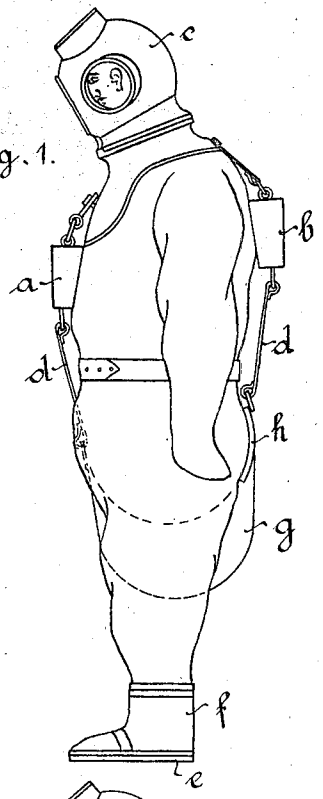


Fig. 2.

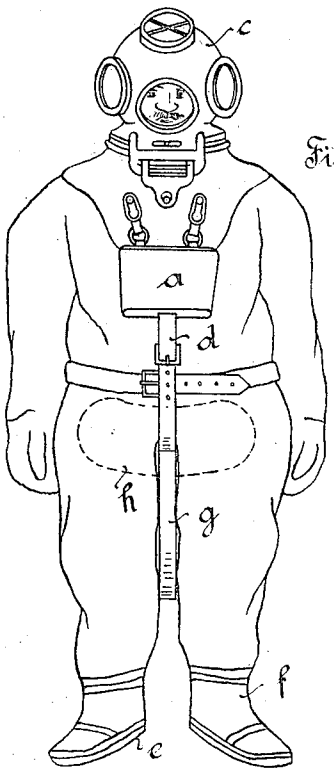


Fig. 3.

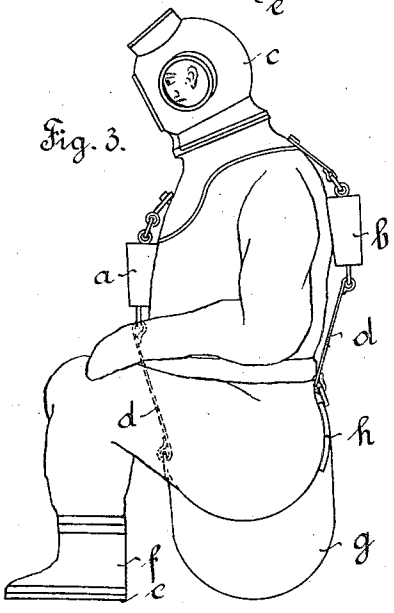
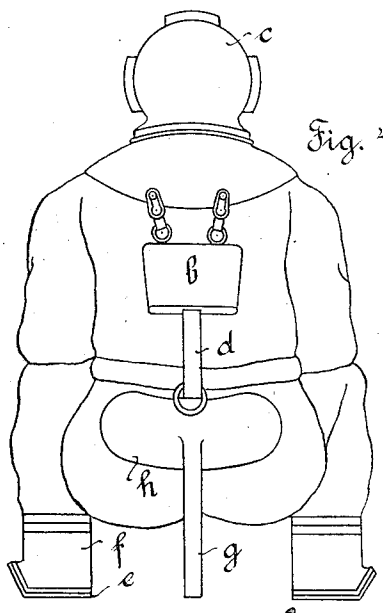


Fig. 4.



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UNITED STATES PATENT OFFICE.

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DISTRIBUTION OF THE WEIGHTS ON DIVERS' SUITS.

1,162,525. Specification of Letters Patent. Patented Nov. 30, 1915.

Application filed March 26, 1915. Serial No. 17,224.

To all whom it may concern:

Be it known that I, HERMANN STELZNER, a subject of the German Emperor, and residing at Lübeck, in the German Empire, have invented certain new and useful Improvements in the Distribution of the Weights on Divers' Suits, of which the following is a specification.

For overcoming the buoyancy of divers' apparatus having air tight suits generally three weights are used one as lead weights on the soles of boots, the second weight being arranged on the chest and the third weight on the back attached to the rim of the helmet. The two last named weights, which are connected by a riding belt running around the body between the legs, have mainly the object to keep the helmet down on the body against the buoyancy of the inclosed air and this is particularly necessary when a greater amount of air has entered the suit than generally is necessary. Moreover the function of these two upper weights is to burden the diver when in lying position or kneeling down in such manner that the air within the suit does not draw the upper part of the body upward to a too great extent thus enabling the diver to work in all positions whether lying, kneeling or standing. The double weight on the soles of the boots counteracts the buoyancy of the legs in the water to allow of walking on the bed of the water without any exertion. This foot weight must be heavy enough to counteract the increased buoyancy of the legs when the diver is working in lying position. Moreover this weight must be so large, that when the diver is partly above the level of the water he may be still floating in upright position, that is to say, the center of gravity must always be below the center of buoyancy. For this last named reason one is apt to make the foot weights too heavy which in fact is frequently done. If however the weights of the feet are too heavy they are a great hindrance when walking or moving about on the bed of the water. As a rule only a few pounds will be sufficient for these weights to warrant comfortable walking; that is to say, to make the foot a little heavier than the weight of the displaced water.

The new weight distribution accounts for these requirements to an extensive degree; it enables a better walking and a more convenient working in any position of the diver. This object in view, the feet are only weighted to such an extent as to enable a comfortable walking, while the additional weight usually applied to the feet and having the object of allowing the diver to rise partly out of the water in upright position is transferred up to the height of the hip-joint. Preferably this weight is attached between the legs to the riding belt, which connects the two helmet weights, thus the weight will be always below the center of buoyancy, enabling the diver to stand in upright position even when his head and also his breast rises above the level of the water. In lying position this weight is no hindrance in any way.

In the drawing Figure 1 illustrates a diver's suit in side view and Fig. 2 is a front view in standing position. Fig. 3 shows the diver in a sitting position in side view, and Fig. 4 in back view.

The weights *a* and *b* are attached to the rim of the helmet *c* on the chest and on the back in usual way, preferably by suspending them on hooks. These weights are connected by the known riding belt *d*. The double weight *e*, *e* which also as usual, is attached to the soles of the boots *f* is lighter than made heretofore, and the new additional weight *g* is in the construction shown attached to the riding belt *d*.

If it is so desired, the weight *g* may be provided with lateral flanges *h* on the back on its upper part to afford a comfortable seat for the diver when it is necessary to work in a sitting position or when the diver becomes tired, which frequently happens, when working under water. The pressure of the column of water from the fold to the lowest point of the air bulb within the suit, is apt to cause vascular engorgements of the peroneal muscles which very disagreeably affects the diver, if he cannot move his legs in order not to lose his footing. When in a stooped or sitting position the weight will be allowed a good support for the diver as shown and the flanges distribute the pressure on the posteriors, so that the diver is enabled to work in a sitting position for a comparatively long time. This operation of the weight *g* will be facilitated still by the fact, that it assists the weights *a* and *b* to counteract the buoyancy which tends to lift the diver from the sitting position. If it was

tried to facilitate the sitting down without making use of the weight *g* but by allowing air to escape, to reduce the buoyancy, the air within the diver's suit would not be sufficient for breathing.

It is not absolutely necessary to attach the weight *g* to the riding belt *d*, but this arrangement has the advantage, that the additional weight assists the breast weight and the weight on the back, when holding down the helmet. Therefore it is possible to allow more air to enter the diver's dress than has been possible heretofore when making use of the same amount of weights.

I claim:

1. An air tight suit for divers comprising a weight on the front, weight on the back of the suit, weights on the feet, and an additional weight near the hip-joint provided with flanges to form a seat for the diver.

2. An air-tight suit for divers having a weight suspended between the trousers' legs and extending from the crotch to the knee portion thereof when in standing position, and means to maintain said weight in line with the body portion of the suit during all positions of the wearer.

HERMANN STELZNER.

Witnesses:
JOHN WULF,
HERMANN RHODE.