

L. D. PHILLIPS.
STEERING SUBMARINE VESSELS.

FIG. 1.

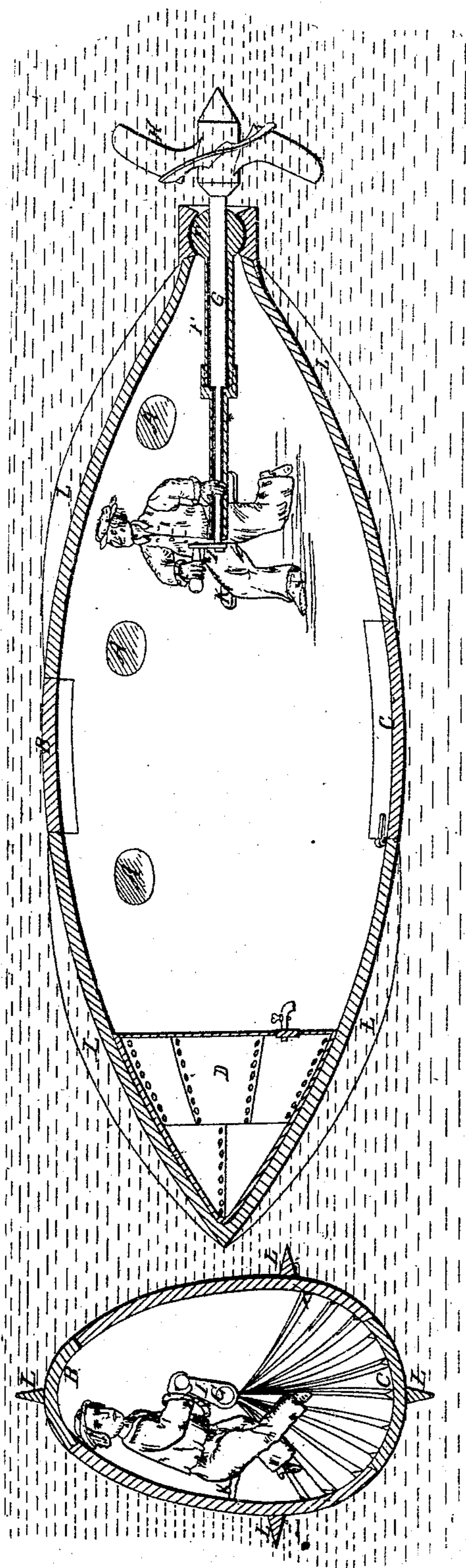


FIG. 2.

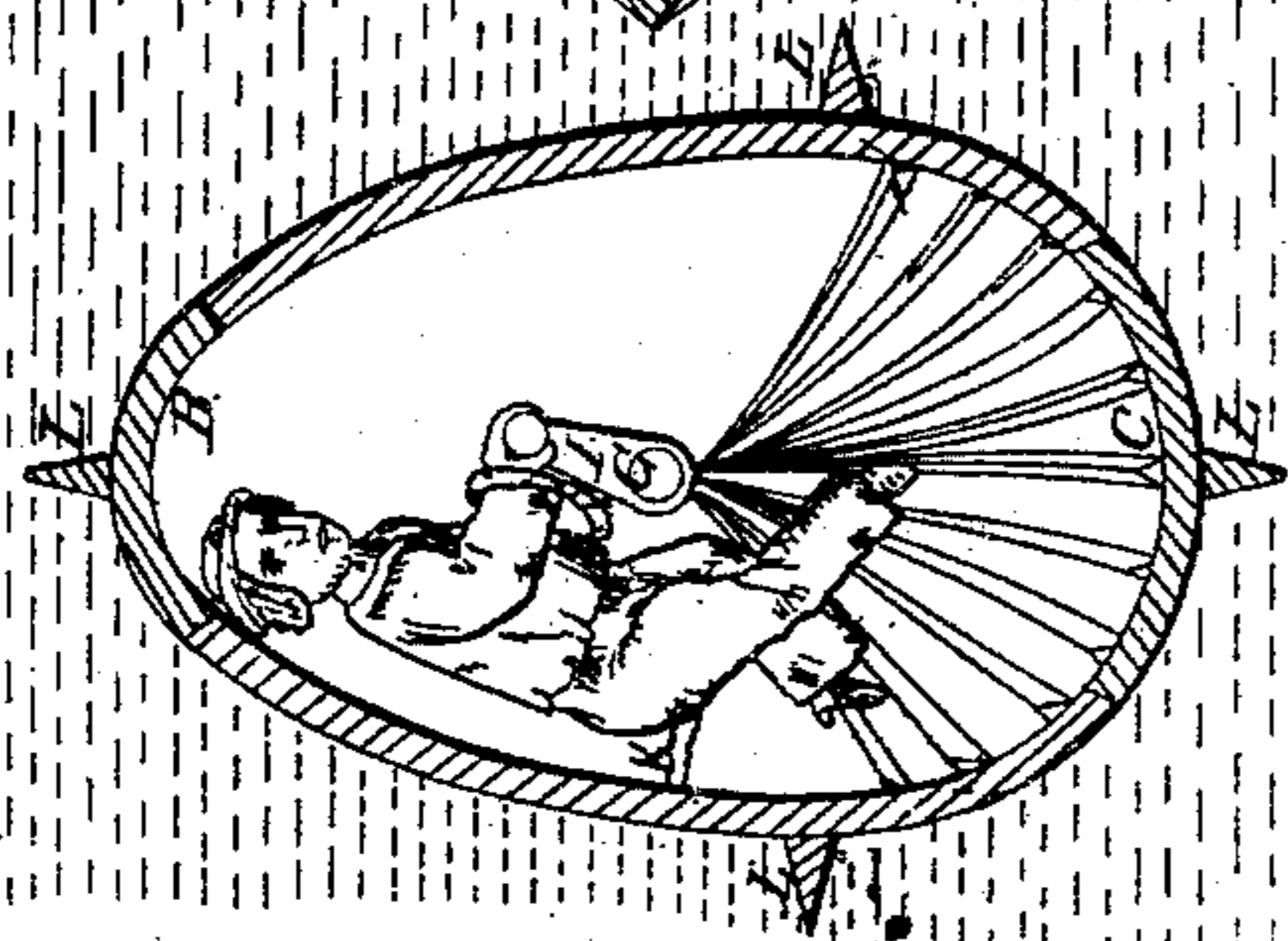
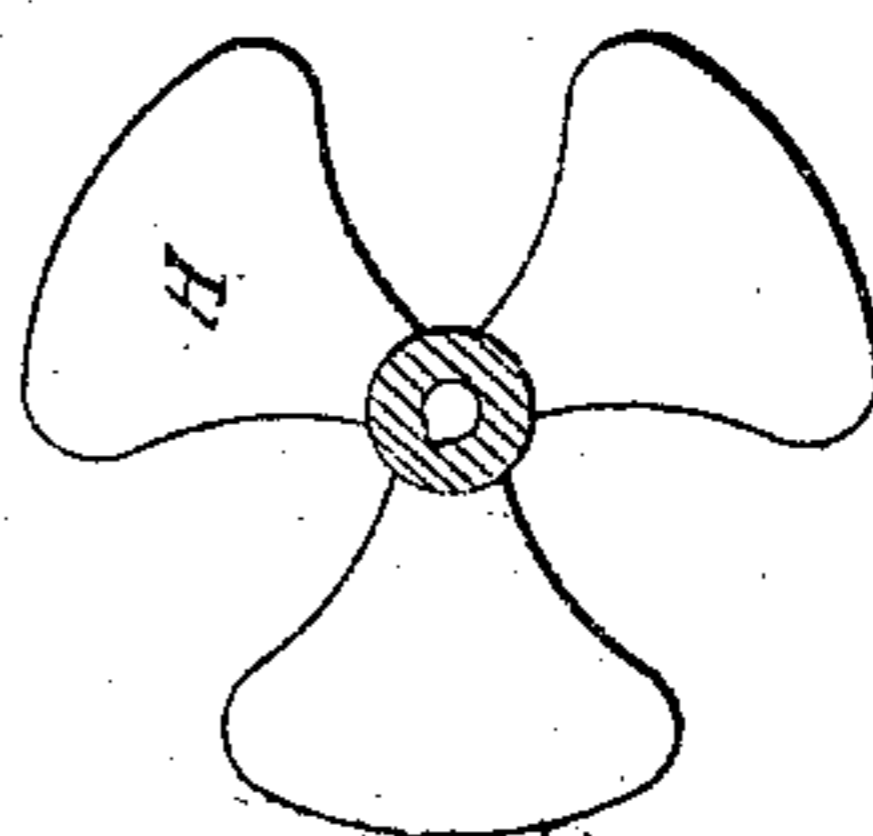


FIG. 3.



UNITED STATES PATENT OFFICE.

L. D. PHILLIPS, OF MICHIGAN CITY, INDIANA.

STEERING SUBMARINE VESSELS.

Specification of Letters Patent No. 9,389, dated November 9, 1852.

To all whom it may concern:

Be it known that I, L. D. PHILLIPS, of Michigan City, in the county of Laporte, in the State of Indiana, have invented certain new and useful Improvements in Submarine Vessels for the Purpose of Exploring the Bottoms of Harbors, Rivers, Lakes, and Seas; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 represents a longitudinal vertical section of a vessel having my improvements applied thereto, Fig. 2 represents a vertical transverse section of the same, and Fig. 3 represents an end view of the propeller detached from the vessel.

It often happens that when a submarine vessel is below the surface of the water, that sufficient headway cannot be obtained to steer her by, with a rudder of the usual construction, and the lives of the inmates of the vessel are from this cause often greatly imperiled. To remedy this difficulty is one of the chief objects of my invention which consists, in mounting the axis of the propeller on a universal joint, so that it can be inclined in any direction for the purpose of applying the whole propelling power to the steering of the vessel when it is necessary to do so.

To render the vessel steady in the water and easy to guide in any direction, I fit her with four keels, one on the top, one on the bottom, and one on each side.

To supply the occupants of the vessel with a wholesome atmosphere, air is compressed into a strong metallic receiver to a density of several atmospheres, so that a large quantity of air may be in a small bulk. This air can be let out from time to time as may be required for the purpose of respiration, and to exclude the water.

In the accompanying drawing the hull of the vessel is represented to be of a form closely approximating that of a fish, but it may be made of any suitable shape, and of any suitable material.

To supply light to the interior of the vessel the sides and top thereof are fitted with bull's-eye (A).

Access is had to the interior of the vessel by means of an opening in the top fitted with a hatch (B) which, when the vessel is submerged, must be hermetically sealed.

The bottom of the vessel has also an opening in it which is fitted with a hatch (C) which must be shut when the upper hatch (B) is open, to prevent the vessel from filling with water, but may be opened when the latter is closed, either for the purpose of permitting persons to pass in and out, or to facilitate the examination of the bottom of the river, harbor, or other place being explored. To facilitate such explorations the air condensed into the receiver (D) must be let out until the density of the atmosphere within the hold of the vessel, just equals the pressure of the water without, which will keep the latter down to the level of the bottom of the vessel.

The stern of the vessel has a ball (E) fitted into it, which will turn freely and still form a joint sufficiently tight to exclude the water from the vessel, and to retain the air within. This ball has an opening made through it from the inner end whereof, a hollow stem or sleeve (F) projects to form a tiller and a bearing and guide for the shaft (G) on the outer extremity of which the propelling wheel (H) is mounted and on the inner end of which a crank or winch (I) is secured, by which the shaft and wheel are turned by hand as represented.

For the convenience of the person who propels and steers the vessel, a seat (K) is provided in the after portion of the hold, and the floor of this part of the vessel may be covered with narrow ribs or slats to give a firm foot-hold to the steersman.

The keels (L) may be made of any suitable material and may, if found expedient, be interrupted like those shown in Fig. 1 on the top and bottom of the vessel, which in this instance are merely interrupted to admit the hatches.

The steering of the vessel is effected as follows: If for example, she be in a horizontal position as represented in the drawing, and it is required to cause her to ascend, the tiller (F) is depressed and the rotation of the wheel (H) will cause the stern to descend at the same time the vessel is forced ahead in an oblique direction toward the surface of the water. If the tiller be raised instead of depressed while the propeller is kept in rotation, the stern will be elevated and the vessel will take an oblique course downward, if the tiller be turned to one side the vessel will turn to the other.

The keels (L) have the effect of prevent-

ing the vessel from being too sensitive to the action of the helm, and also tend to prevent her from rolling over as she would be very liable to do if she had but a single keel or was left entirely smooth.

The several parts of a vessel constructed upon the principle I have described may be in various ways modified to adapt it to particular purposes, but as every competent constructor of submarine vessels is capable without instruction to make such modifications, it is here unnecessary to describe them.

What I claim as my invention and desire to secure by Letters Patent, is—

1. The arrangement of the shaft of the propeller so as to pass through, and be guided by the tiller or the equivalent there-

of, mounted on a universal joint in order that the propeller may be driven by one hand while the vessel is steered in any direction by the other, substantially as herein set forth.

2. I likewise claim the combination of a universal rudder with a series of keels arranged on the top, bottom, and sides of the vessel to aid in steadying her and to facilitate the steering of her in various directions by means of a universal rudder substantially as herein set forth.

In testimony whereof I have hereunto subscribed my name.

L. D. PHILLIPS.

Witnesses:

P. H. WATSON,
EDW. T. RENWICK.