G. W. McMULLEN.

Torpedo-Boat.

No. 227,637. Patented May 18, 1880.

Fig 1

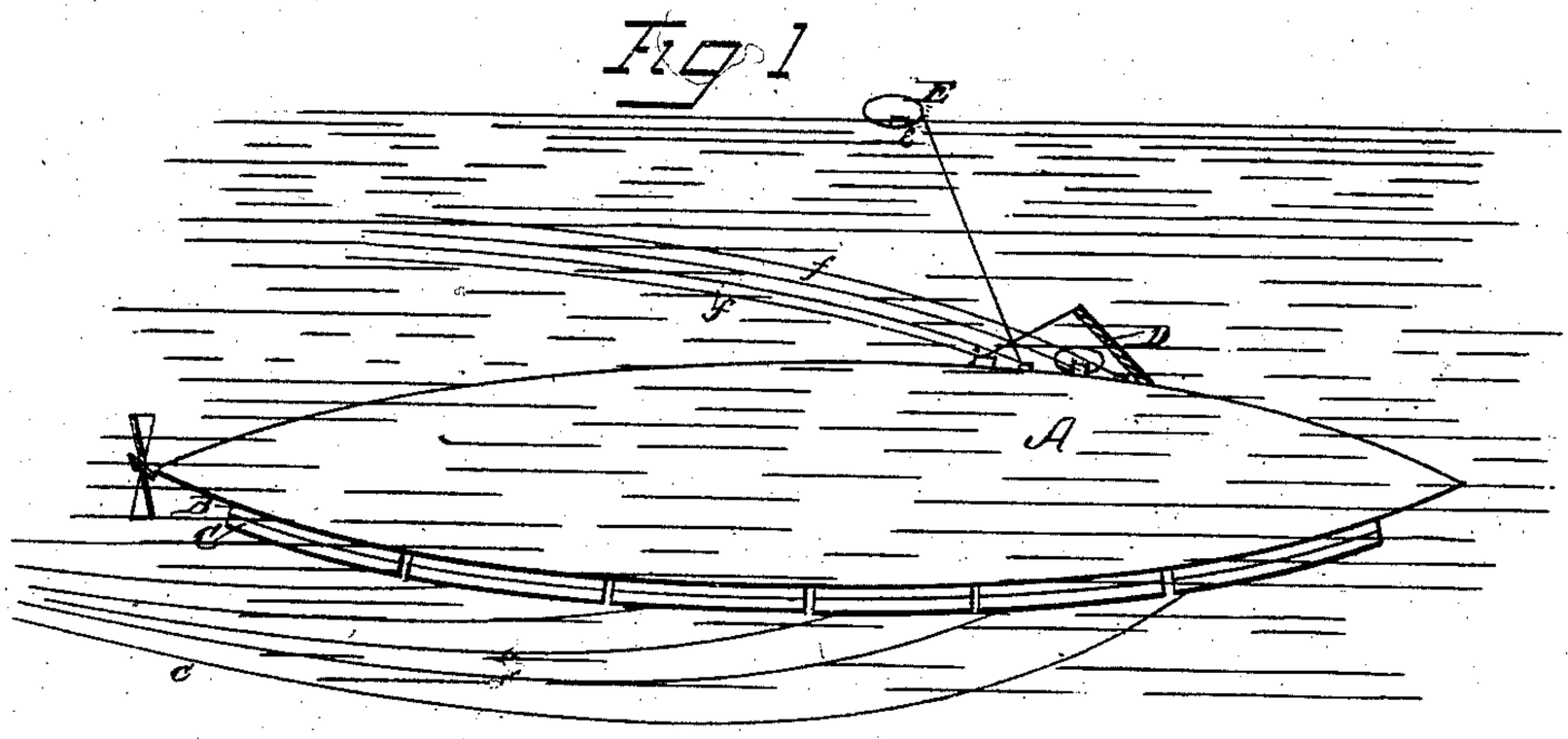


Fig 2

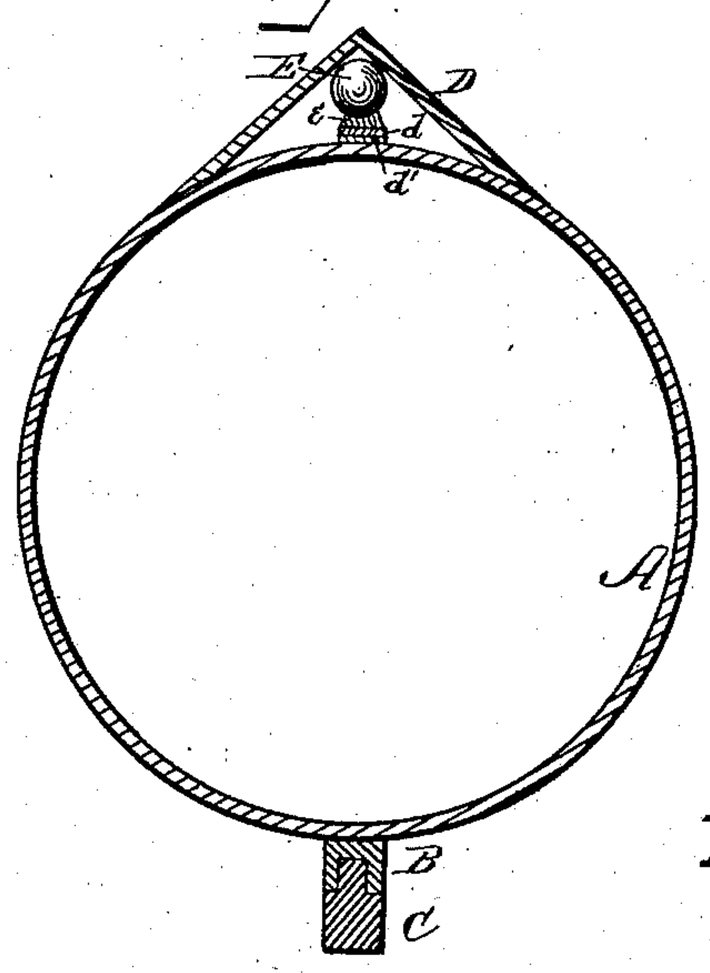


Fig 3

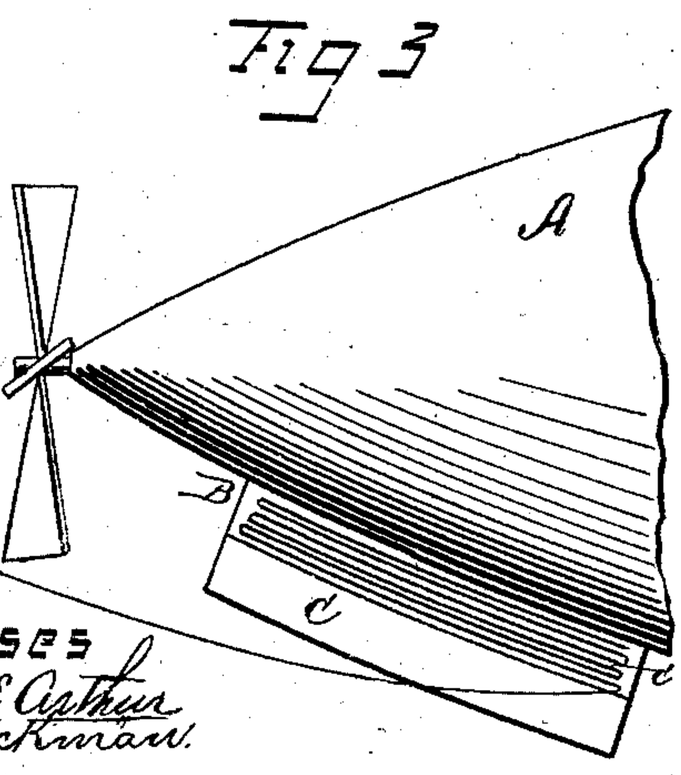
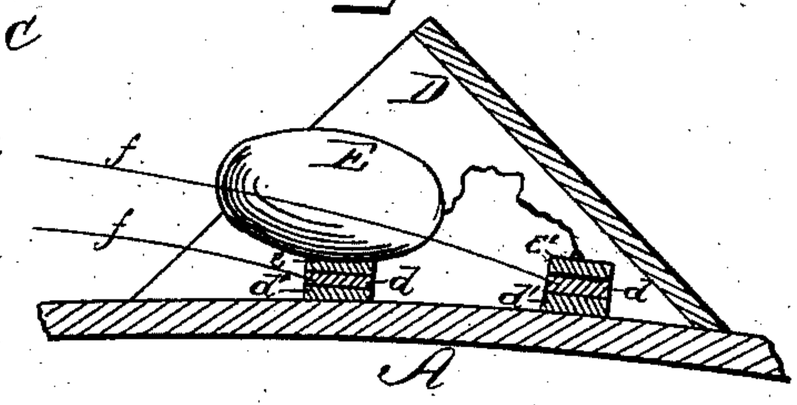


Fig 4



Witnesses

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Inventor

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UNITED STATES PATENT OFFICE.

GEORGE W. McMULLEN, OF CHICAGO, ILLINOIS.

TORPEDO-BOAT.

SPECIFICATION forming part of Letters Patent No. 227,637, dated May 18, 1880.

Application filed October 10, 1879.

To all whom it may concern:

Be it known that I, GEORGE W. McMULLEN, of the city of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Apparatus for Perfecting the Navigation of Submarine Torpedo-Boats, and all or any parts of said invention may be successfully applied to any other kind of submarine vessel; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

My invention relates to apparatus for sinking the torpedo to any required depth below the surface, causing it to rise instantly at the required moment, and also for indicating its exact location at any moment to the party controlling its course from the shore or other starting-point.

In the accompanying drawings, Figure 1 is a side view of a torpedo with floats and weights attached. Fig. 2 is a cross-section of the same, showing groove in holding-piece with keel-piece attached. Fig. 3 is an enlarged section, showing detachable keel or weight and holding-piece, with coils of wire, creating the electro-magnet. Fig. 4 is a section of the deck or upper side of the torpedo, showing enlarged view of the shield-piece, float, electro-magnets, and attachments.

My invention consists of the grooved pieces of soft iron B, firmly fastened on the under side of the torpedo A, running lengthwise and properly insulated. About each of these pieces B, which may be as numerous as is found desirable, shall be a coil of wire, *c*, connecting with a battery at the starting-point and conveying a current of electricity. Fitting into the grooves in the above-described pieces B, I insert keel-shaped pieces C, of iron or any proper material that will be attracted by electro-magnets, of sufficient weight (to be ascertained by practical experiment) to sink the torpedo A to any desired depth. These pieces C will be firmly held in place by the attraction created by the electric current above described, and the grooves into which they are inserted will prevent any side or other displacement by currents of water or minor obstacles. The grooves may, of course, be either in the electro-magnets or holding-pieces B, or in the keel-pieces C, at the option of the builder.

I also carry, on the top of the torpedo A, a number of light floats or buoys, E. These are attached to a line or wire fastened to a small piece, *e'*, of iron or any other proper material that yields to the attraction of electro-magnets. I also attach a similar piece, *e*, to the body of the float E. For holding each of these floats E, I provide two or more electro-magnets, *d*, of sufficient power, in the same manner as described for holding the keel-pieces C—*i. e.*, I attach two or more pieces of soft iron on the top of the torpedo A, over the insulating-pieces *d'*, for each float E that is to be carried, and convey the electric current to them by wires *f* from the battery at the starting-point. In this way both the body of the float E and the lines or wires attached to it are held firmly to the torpedo A. To protect these floats E from the action of the water and to provide against too much impediment to navigation, I erect in front of them a shield-piece, D, of wood or other proper material, behind which they can securely ride. Each float E may have two or more pieces, *e* and *e'*, of iron or other proper material that yields to the attraction of electro-magnets, upon itself, in which case the wires attaching it should be fastened mechanically to the torpedo A and by electro-magnetic attraction to the float E.

The operation of my invention is as follows: The torpedo A starts from the shore directed toward the enemy. On its lower side it carries, sustained as described, sufficient weights C to sink it to any desired depth. The operator, by using a battery to which the wires *c* are attached, as before described, can, at will, break the circuit with any of the sustaining-sections B and instantly sink one or more of the pieces C. On the top of the torpedo A are carried a number of floats, E, each held in place by two or more electro-magnets, *d*, as hereinbefore described. At the will of the operator one or more of these floats E are released from the body of the torpedo A by breaking the proper circuit. The float E instantly rises to the surface of the water, but is still

held and towed by the lines or wires above described, which give it a second connection. Each float thus serves a double purpose. It is a signal to the operator to tell him where the torpedo is when it is partially released and floating at the top of the water, as shown in Fig. 1, and it also assists the weight C in regulating the depth to be attained by the torpedo, for in case it too nearly approaches the surface of the water the total or partial release of one or more of the floats E sinks it again, and their buoyancy when being towed at the surface of the water assists materially in steadying the torpedo A and in making it maintain a less fluctuating course than without them. In case the enemy should observe this partially-released float, and thereupon attempt to capture the torpedo, the operator can, by completing its release, reward him with a simple float, plus or minus a wire or line, and, afterward, when the torpedo has gone on farther, the partial release of another float will again detect to him its location, and he may overbalance this loss of buoyancy by the sinking of one or more of the weights C. It is obvious that the float or floats E may be detached by other means than by breaking the circuit, as with a hook or other similar connection operated with a small line.

What I claim is this:

1. In combination with a torpedo or other submarine vessel, one or more readily-detachable weights and one or more readily-detachable floats held by electro-magnets, substantially as set forth.

2. In combination with a torpedo or other submarine vessel, one or more electro-magnets, and a weight or weights attached to the boat thereby, substantially as set forth.

3. In combination with a torpedo or other submarine vessel, one or more electro-magnets, and a weight or weights attached thereby, and a detachable float or floats, as set forth.

4. In combination with a torpedo or other submarine vessel, one or more electro-magnets, and a detachable float retained by said magnets, substantially as set forth.

5. In combination with a torpedo or other submarine vessel, one or more readily-detachable floats and a protecting-shield for the same, as set forth.

6. The combination of the float or floats E, electro-magnets *d*, and attaching-pieces *e* and *e'*, for indicating the location of a torpedo or other submarine vessel, substantially as described.

7. The combination of the detachable weights C, the electro-magnets B, the float or floats E, the attaching-pieces *e* and *e'*, and the electro-magnets *d* with a torpedo or other submarine vessel, for regulating the course of such torpedo or vessel, as herein set forth.

8. In combination with a torpedo or other submarine vessel, the inclined shield D, open at the rear and arranged to protect the float or floats E, as herein set forth.

9. The combination of the detachable weights C and the electro-magnets B, with a groove to prevent side or other displacement, as set forth.

In testimony that I claim the foregoing I have hereunto set my hand this 9th day of October, 1879.

GEORGE W. McMULLEN.

Witnesses:
CHARLES W. HAYES,
GEO. D. DESHIELDS.