

(No Model.)

2 Sheets—Sheet 1.

G. C. BAKER, Dec'd.  
M. R. BAKER, Administratrix.  
SUBMARINE TORPEDO BOAT.

No. 525,179.

Patented Aug. 28, 1894.

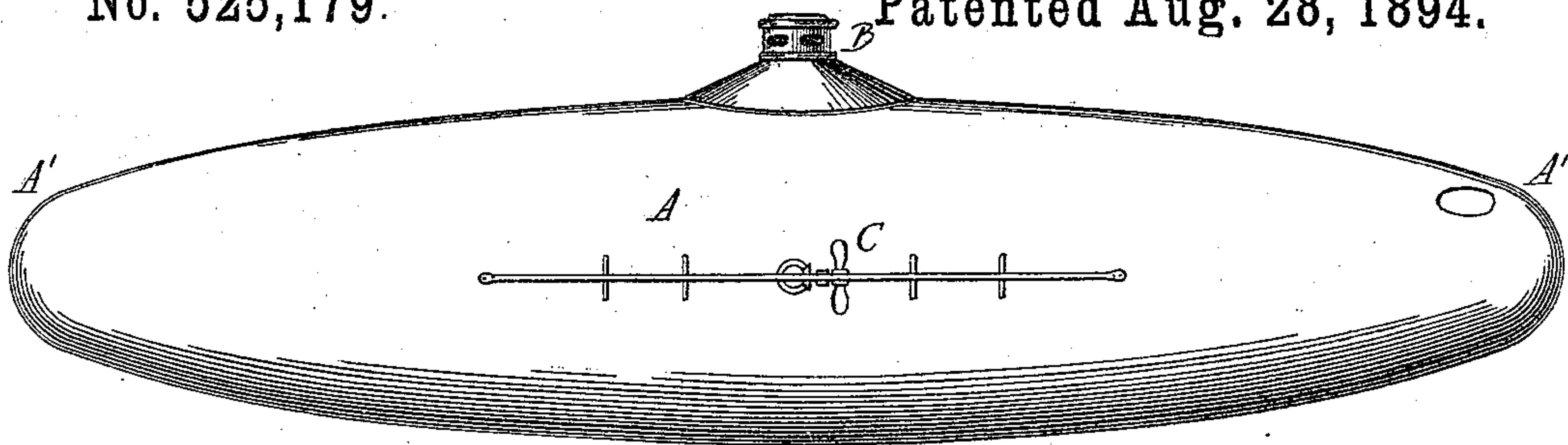


Fig. 1.

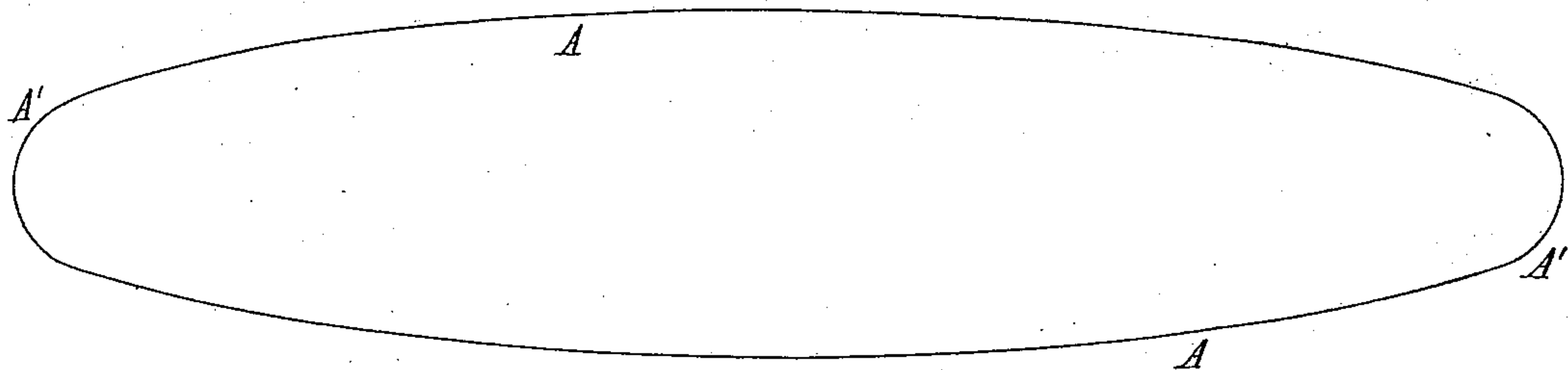


Fig. 2.

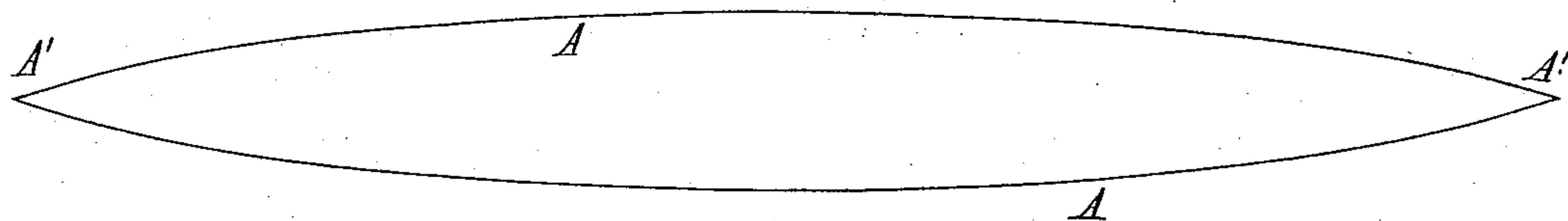


Fig. 3.

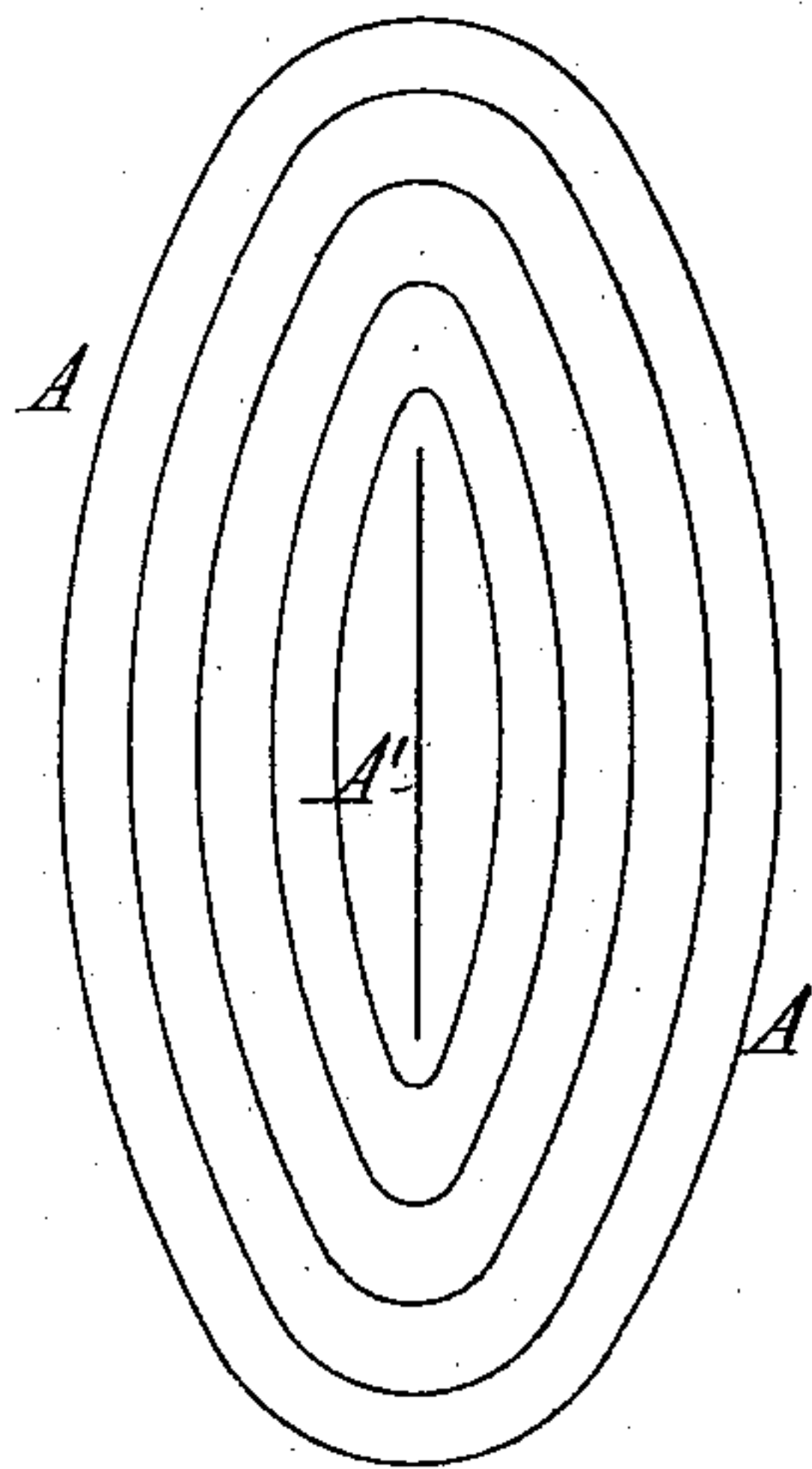


Fig 4

Witnesses

Wm. S. Norton  
D. H. Wood.

Inventor

George C. Baker

By *W. S. Norton & Co.*  
Attorneys

(No Model.)

2 Sheets—Sheet 2.

G. C. BAKER, Dec'd.  
M. R. BAKER, Administratrix.  
SUBMARINE TORPEDO BOAT.

No. 525,179.

Patented Aug. 28, 1894.

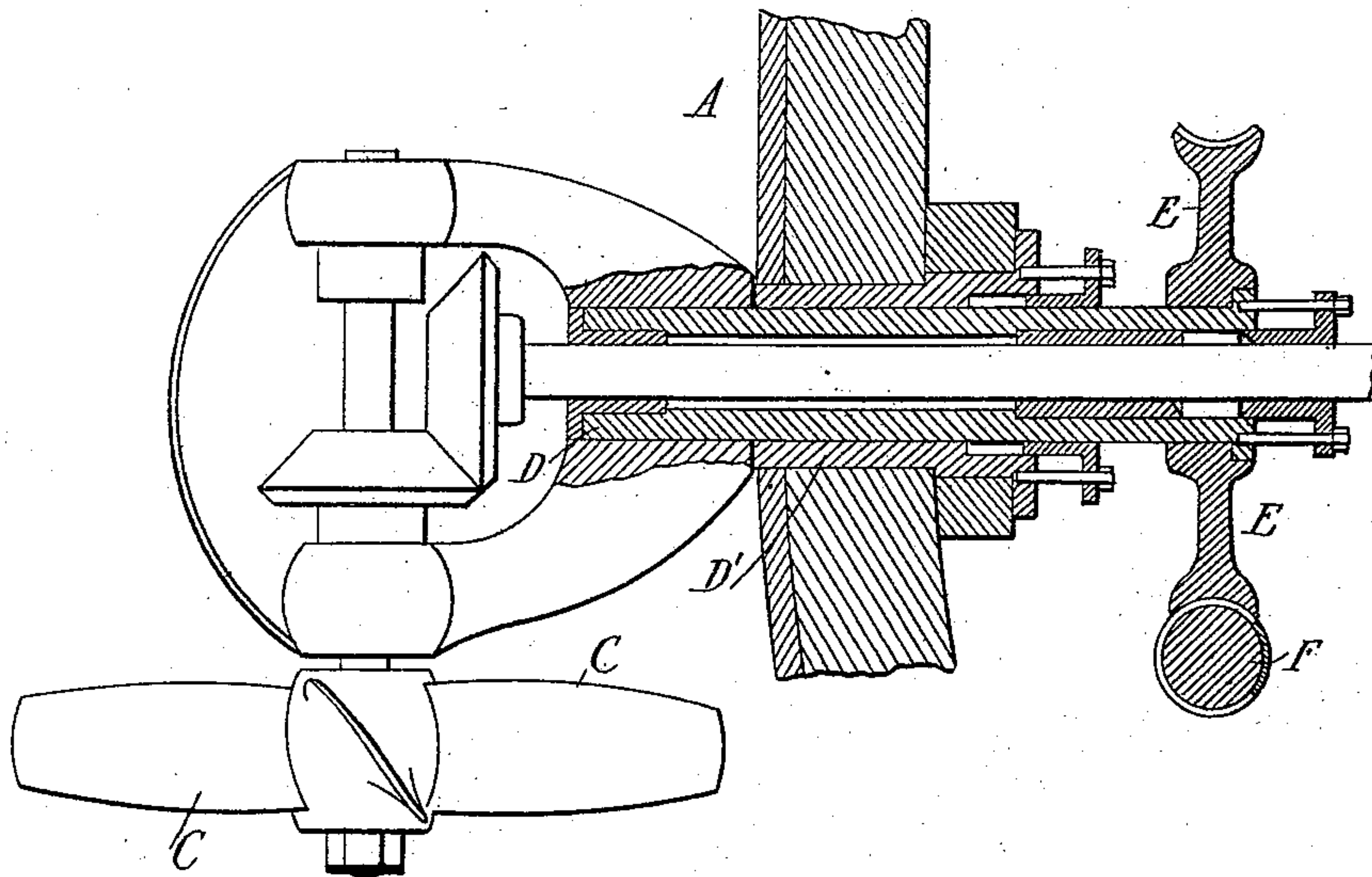


Fig. 5.

Witnesses

Will F. Nott  
R. H. Wood

Inventor

George C. Baker

Wm. W. Lusk & Co.  
his Attorneys



# UNITED STATES PATENT OFFICE.

GEORGE C. BAKER, OF CHICAGO, ILLINOIS; MARY R. BAKER ADMINISTRATRIX OF SAID GEORGE C. BAKER, DECEASED.

## SUBMARINE TORPEDO-BOAT.

SPECIFICATION forming part of Letters Patent No. 525,179, dated August 28, 1894.

Original application filed March 14, 1893, Serial No. 465,983. Divided and this application filed September 25, 1893. Renewed July 10, 1894. Serial No. 517,156. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE C. BAKER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Submarine Torpedo-Boats; and I do 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 the letters of reference marked thereon, which form a part of this specification.

My invention relates to a submarine boat which is capable of propulsion upon the surface of the water, and which is also capable of motion downwardly through the water or parallel with the surface, or of an upward motion, and is a divisional application of the application filed by me on the 14th of March, 1893, Serial No. 465,983.

A feature of my invention is to provide a boat of this character which is adapted to carry and discharge torpedoes with requisite precision. The propulsion and steering of the boat is preferably effected by the employment of the mechanism designed for such purposes, which is described and claimed in my Patent No. 358,425; but my present improvement is more particularly directed to the peculiar form or contour of the hull, and the adaptation of the boat as a torpedo boat, and to this end I construct it upon peculiar lines and so combine it with the propelling and steering apparatus that all the movements of the boat may be guided and controlled with the required certainty and accuracy for discharging torpedoes effectively. It is an essential requirement to adapt them to maintain a stationary position under water for greater or less periods of time, and that they may be moved either forward or backward or upward or downward without liability to deflection from the desired course.

My present invention provides a boat having all these capabilities and which is constructed on such lines that it forms the least possible obstruction to its own passage through the water and no irregularities of

outline which would interfere with its movement, either up or down, or through the water, or afford surfaces against which the water could act to destroy its equilibrium or cause it to be deflected out of the desired course. To this end the general outlines of the boat are of the greatest importance and form a feature of my present invention. To render the importance of the conformation of the vessel to regular lines clear, I may observe that if the vessel were constructed with a flat or deck top and with its bow, stern and keel upon curved lines, its bow could not be forced into the water without very powerful machinery and the tendency of such a vessel would be to raise out of the water, and therefore there would exist with such a vessel a constant tendency to be deflected out of its desired course for which its machinery was set. If, on the other hand, a vessel were constructed with a flat bottom and a covered deck, the tendency of such vessel would be to descend or dive. But by constructing the vessel upon uniform or regular lines terminating at the bow and stern respectively, the boat is perfectly balanced, having neither a tendency to dip into nor to raise out of the water except as influenced by the propelling mechanism, and responding readily thereto so that it may be kept upon a predetermined and desired course with as much certainty while beneath the surface as a boat can be steered upon the surface.

In the accompanying drawings: Figure 1 is a side elevation of a submarine boat embodying my invention. Fig. 2 is a diagrammatic view showing the longitudinal line of the hull as the same would appear in vertical, longitudinal, central section. Fig. 3 is a diagrammatic view showing the longitudinal lines as the same would appear in horizontal, longitudinal central section. Fig. 4 is a diagrammatic view showing the transverse lines of convergence; and Fig. 5 is a detailed view partly in section of one of the propellers and its accessories.

In carrying out my invention I construct the boat upon uniform lines the general shape or outline being elliptical and the bow and stern being wedge-shaped. The vertical di-



ameter is preferably made greater than its horizontal diameter taken through the same point, and the outward longitudinal lines of the hull from bow to stern are substantially the same throughout the surface thereof, or in other words, the portions of the boat above and below a plane passing through its longitudinal center are in outline substantially duplicates of each other, and the same is true of the portions of the boat on each side of a vertical plane passing transversely through its middle.

The shell or body A of the boat may be constructed of any desired material or materials but I prefer to employ an inner wooden shell covered with a wooden sheathing, or a structure formed of steel ribs covered by a sheathing of boiler or other suitable plate. The interior frame work of the boat may be of a simple character as its general form makes it self bracing.

The propelling apparatus is particularly shown in Fig. 5 and comprises in the forms shown, the propeller blades C which are mounted upon short shafts carried in sleeved bearings D which sleeve is rotatable upon the main driving shaft. Bevel gears mounted upon the respective ends of the main shaft and enmeshed with similar gears on the propeller shaft furnish means whereby rotary motion may be imparted to the propeller blades. Said sleeves are supported in collars D' rigidly secured to the shell of the boat and provided with suitable glands of stuffing boxes to prevent entrance of water. The inner ends of the sleeves are provided with suitable gearing, as for example, the worm gears E which are turned by the worms F, the latter being arranged to be manipulated preferably from the pilot's station. Obviously upon the rotation of these worms in either direction the propellers may be moved in the arc of a circle around the driving gear, and hence the direction of movement of the boat is controlled by simply shifting the propellers with reference to the driving shaft, and by such adjustment the boat may be driven forward or backward upon the surface or below the surface of the water, or it may be drawn down into the water or caused to rise out of the water and at any desired angle of movement.

The particular location of the propellers is of utmost importance in the operation of a submarine boat. If this propelling apparatus were placed nearer to one end of the boat than to the other the tendency to dive or rise out of the water, depending upon the location would be almost irresistible, but by arranging the propellers at or about the middle of the sides, the equilibrium is undisturbed by the action of the propellers.

B represents a conning tower which is arranged preferably in the upper portion of

the shell of the boat, and has transparent sections through which observations can be made.

I mount in some convenient portion of the boat, a torpedo tube or gun for firing torpedoes, which are of a character to adapt them to be discharged from a tube or gun mounted inside the boat, or in case it is desired to serve a torpedo which is not adapted to be so discharged it may be served from apparatus connected to the outside of the boat.

A boat constructed as above described can be used for a variety of purposes. For example, in the examination of wrecks; in inspecting the character of the beds of lakes and other bodies of water; for the purpose of locating submarine structures; in the laying and inspection of telegraphic and other cables; and generally wherever it is desired to perform work below the surface of the water; but the chief object and aim of the invention is to provide a boat which shall be well adapted as a war vessel and particularly designed for the discharge of torpedoes.

The advantages of the boat above described for this last named purpose are perhaps sufficiently obvious as not to require extended mention. Attention is called to the fact however that sufficient celerity of movement may be obtained with a comparatively low motive power because the shape of the boat presents but little obstruction to its propulsion through the water. The main feature however is the ability to perfectly control the movements of the boat and to guide and direct it in any desired course without deflection whereby accuracy may be obtained in the discharging of torpedoes.

I claim—

1. The hull of a submarine boat substantially wedge-shaped at bow and stern, and whose vertical diameter is greater than its horizontal diameter taken through the same point, the outward longitudinal lines of the hull from bow to stern being substantially the same throughout the surface thereof.

2. The hull of a submarine boat substantially wedge-shaped at bow and stern and whose vertical diameter is greater than its horizontal diameter taken through the same point, the outward longitudinal lines of the hull from bow to stern being substantially the same throughout the surface thereof, provided with adjustable propelling mechanism whereby the movement of the boat in any direction is controlled.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE C. BAKER.

Witnesses:

WILL T. NORTON,  
ARTHUR BROWNING.