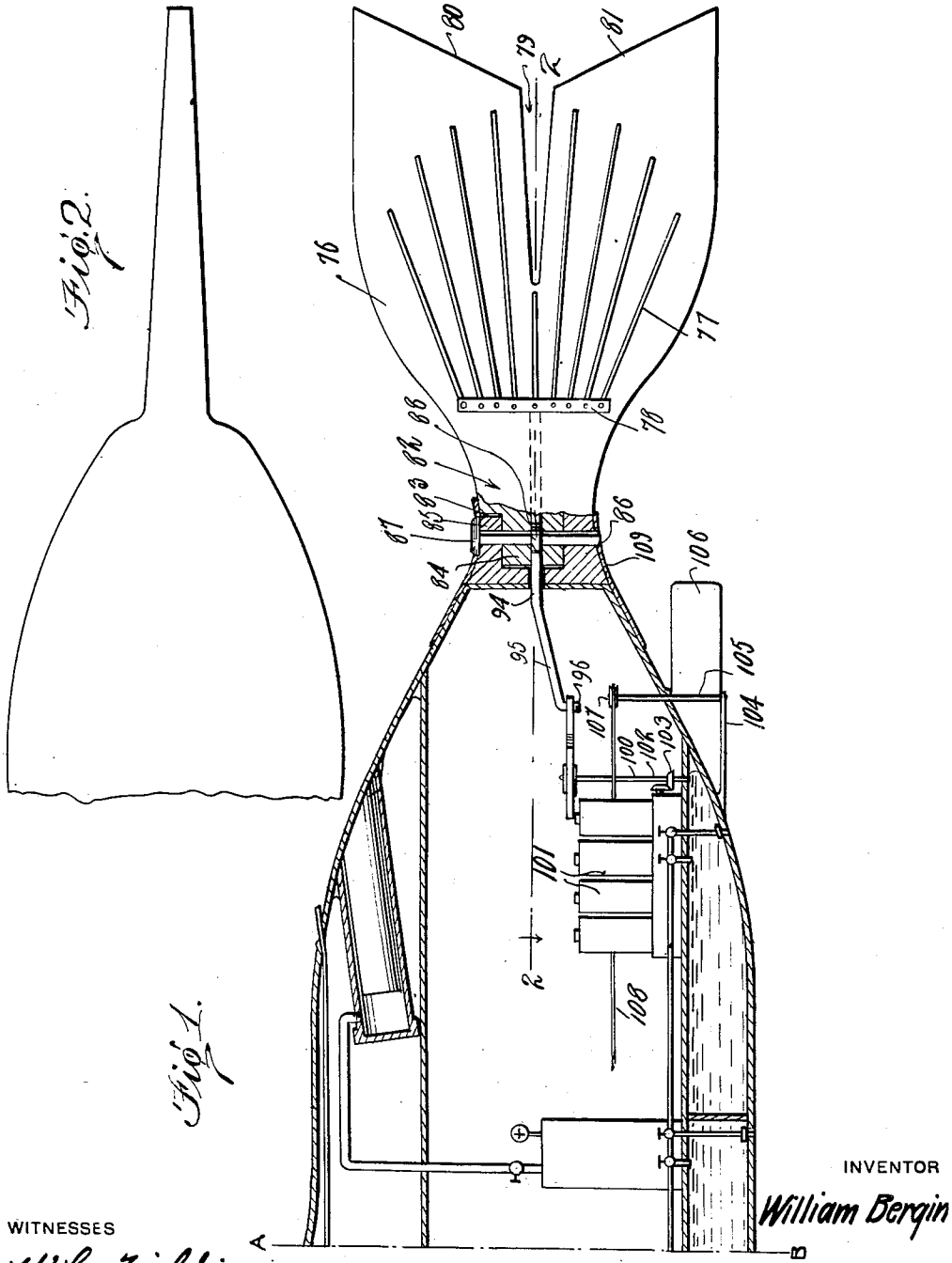
W. BERGIN.

SUBMARINE.

APPLICATION FILED DEC. 11, 1917.

1,324,722. Patented Dec. 9, 1919.



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SUBMARINE.

1,324,722. Specification of Letters Patent. Patented Dec. 9, 1919.

Application filed December 11, 1917. Serial No. 206,660.

To all whom it may concern:

Be it known that I, WILLIAM BERGIN, a citizen of the United States, residing at Lewistown, in the county of Fergus and State of Montana, have invented certain new and useful Improvements in Submarines, of which the following is a specification.

This invention is a submersible apparatus of the type commonly known as a submarine boat and is more particularly adapted for offensive work in submarine warfare wherein the boat is so constructed that it will be more effective and useful in its work of destruction by so constructing the propeller mechanism that the water surface disturbance is substantially avoided.

One object of the invention is to provide a mechanism for propelling the boat which consists in employing a propeller that is adapted to be oscillated in a horizontal plane.

Another object is to provide a propeller of elastic and flexible material such as rubber with stiffening ribs of relatively flexible material and shaping the propeller to have a substantially fish-tail form to practically eliminate surface disturbances.

Figure 1 is a longitudinal section through the stern of a submarine boat showing my invention applied thereto.

Fig. 2 is a section taken approximately on the line 2—2 of Fig. 1.

Mounted upon the submarine vessel is a propeller 76 that is approximately of fish-tail configuration. The propeller is preferably formed of some elastic material such as rubber and it is desired to reinforce it by means of the ribs indicated at 77 that extend outwardly from a common base 78. Any suitable material, such as bronze may be employed in forming these ribs so that a desired degree of inflexibility may be obtained. As shown the propeller is provided transversely with an open ended slot indicated at 79 and the free ends adjacent thereto are angularly cut as indicated at 80 and 81.

The propeller 76 is provided at its forward end with a reduced section or neck indicated at 82 that terminates adjacent the shoulders 83. Between the shoulders 83 there is a projection or lug 84 that is provided with a hole. The projection 84 is adapted to be engaged between the flanges 85 and 86 and these flanges are also provided with holes to aline with the hole formed in the lug 84.

To coöperate with these several holes a pin 87 or other suitable engaging means is employed. This pin 87 will serve as a pivot or pintle to permit the propeller 76 to oscillate. The neck section 82 is provided with a slot 88 through which is adapted to pass one end of a lever generally indicated at 89. The rear end of the lever 89 terminates adjacent the base 78 for the ribs 77. This portion of the propeller may be formed of inflexible material, such as bronze if desired so as to form a substantially inflexible body portion.

The rubber portion 76 may extend rearwardly and may be firmly fastened to this body section 82. The projection 84 is provided with a rounded portion 91 formed in the stern piece carrying and having the flanges 85 and 86 thereon. The stern piece is provided with a rounded wall slot 92 that is disposed transversely so that the lever 89 may operate therein.

The lever 89 is provided with an eye portion 93 that is adapted to engage with the pin 87. The lever 89 extending into the hull from the pin 87 is provided with a straight portion 94 from which extends downwardly an angular portion 95 having a bent end 96. This bent end 96 is adapted to fit and be engaged in a suitable hole formed in one end of a link 97 in order that such links may be rigidly but removably connected to the lever 95. This link 97 is of the closed slot variety and the slot portion 98 is adapted to be engaged by a disk 99.

The disk 99 may be formed in any suitable manner and is preferably eccentrically mounted upon the shaft 100. The shaft 100 as shown extends in a vertical direction and the disk 99 is so formed that during its rotation the link 97 will produce an oscillatory motion in the propeller 76. The shaft 100 may be driven by any suitable source of power and in the present instance the prime mover is indicated at 101.

The gear wheels 102 and 103 serve to connect the crank shaft of the prime mover 101 with the shaft 100. At a suitable point upon the under surface 10 there is connected a bracket 104 that provides an out board bearing for the shaft 105 of the steering rudder 106. The shaft 105 extends up-

wardly through the surface 10 and has connected at its upper end suitable means such as the pulley 107 and the cable 108 for rotating the shaft 105.

In order to provide for forming a substantially water tight joint between the propeller 76 and the stern plate the neck portion 82 may be connected with the hull by suitable material, such as rubberized fabric indicated at 109 that may be water proof in itself. The material 109 may be formed so as to provide a sleeve of flexible material and includes a joint formed between the propeller and the hull.

What I claim is:—

1. A vessel having a flexible propeller, reinforcing means on opposite sides of the propeller, means to oscillate the propeller, and means extended from the fulcrum of the propeller disposed intermediate the first mentioned means to coöperate therewith to rigidify the propeller.

2. A vessel having a flexible propeller, a substantially vertical reinforcing bar thereon, means to oscillate the propeller having a substantially horizontal means extending from the fulcrum to the bar to reinforce the propeller between the bar and its fulcrum, reinforcing pins for the propeller extending from the first mentioned bar, the outer end edge of the propeller extending inwardly to the horizontal median line thereof, said propeller from said edge having an inwardly elongated flap, the end of said pin being at progressively greater distances from the said outer end edge of the propeller starting at said median line.

3. A vessel having a flexible propeller, transverse reinforcing means therefor, a stern piece secured to the vessel, said propeller having a neck coöperating with said stern piece, a substantially vertical pivot member extending through the stern piece and said neck, a lever rigid with said pivot member having a portion to rigidify the propeller extending from the pivot member to the transverse reinforcing means, said lever extending interiorly of the vessel, a link to which said lever is connected interiorly of the vessel, means to move the link to oscillate the lever, a water proof extending from the vessel over the stem piece and overlapping said neck to provide a water proof connection between the propeller and vessel around the fulcrum of the propeller.

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

WILLIAM BERGIN.

Witnesses:

SAM W. PENNOCK,

IRVING A. PIERCE.