S. WIEBE.

SUBMERSIBLE TOY SUBMARINE.

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1,312,656. Patented Aug. 12, 1919.

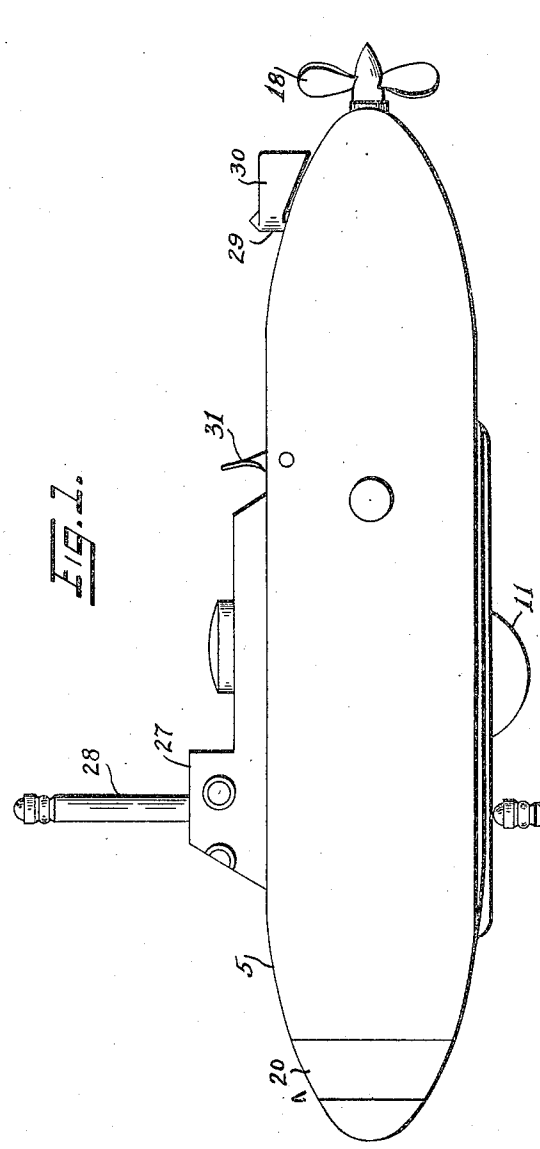


Fig. 1.

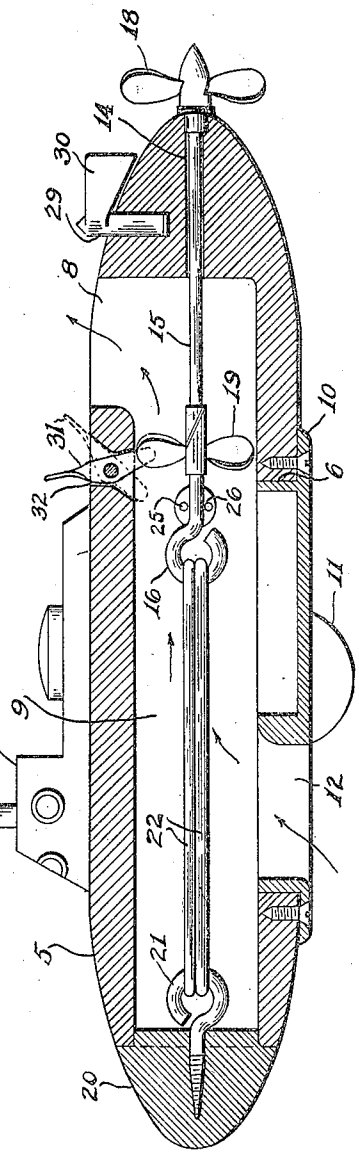


Fig. 2.

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UNITED STATES PATENT OFFICE.

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SUBMERSIBLE TOY SUBMARINE.

1,312,656. Specification of Letters Patent. Patented Aug. 12, 1919.

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To all whom it may concern:

Be it known that I, SIGURD WIEBE, a subject of the King of Sweden, residing in Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Submersible Toy Submarines, of which the following is a specification.

This invention relates to toys built in imitation of submersible boats and has for its object to provide a toy of this kind which may be easily and cheaply manufactured, which will be simple and durable in operation and which is not likely to get out of order.

While herein, I have described minute details of one of many possible embodiments of the invention, the invention is not limited to these details, since the details of construction and combination may be greatly varied, or the construction may be adapted to uses other than submersible toys, without departing from the spirit and scope of the invention as claimed.

Figure 1 is a side elevation of the submersible toy boat.

Fig. 2 is a vertical approximately longitudinal sectional view through the boat.

The boat comprises a buoyant hollow hull 5 open at the front end, closed at the rear end and provided with an intermediate opening 6 in its lower part and a rear opening 8 in its upper part, both communicating with the interior passage 9 of the hull. In said lower opening 6, there is detachably secured a ballast plate 10 provided with a keel 11 and a forward opening 12 communicating with the passage 9.

The rear end of the hull is provided with an axial bore 14 through which is passed the propeller shaft 15, provided at its forward end with a hook 16, at its rear end with an exterior propeller 18, and at its intermediate part with an impeller 19 disposed forward of the rear opening 8. In the open forward end of the hull, there is rotatably mounted a winding head 20, from the rear face of which projects a screw-eye 21 between which and said hook 16 there are stretched strong rubber bands 22.

If desired, the forward part of the propeller shaft may be held in alinement by means of a cross-piece 25 secured in openings in the side of the hull and provided with a bearing opening 26 receiving the propeller shaft at a point between the impeller and the hook 16. Upon the upper part of the hull, is placed the cabin 27 provided with a periscope 28 in order to more closely simulate the appearance of a submarine boat. In the upper part of the rear end of the hull is a vertical bore in which is frictionally received a rudder post 29 carrying a rudder 30.

For holding the propeller shaft stationary while the bands are being wound up, there is provided a detent 31 pivotally mounted in a slot 32 just above the impeller 19. When this detent is in the position of the full lines, the impeller 19 is engaged and the latter and the propeller shaft 15 held against rotation. When the detent is shifted to the dotted line position, the impeller and shaft are free to rotate. The detent may be operated by hand or by a stick or even by a proper projectile from a toy gun.

The bands 22 may be wound up or twisted by holding the propeller from rotation by means of the detent 31 or by hand, and rotating the winding head 20 until the band is sufficiently wound up; or on the other hand, the winding head may be held stationary and the propeller rotated rearwardly until the rubber bands are sufficiently twisted. After this has been done, the boat is placed in the water and the band allowed to unwind, the detent being placed in the position of the dotted lines, thereby rotating the propeller and the impeller, propelling the boat forward and at the same time causing a current of water to pass into the boat through the lower opening 12, thereby causing the boat to be submerged and the boat to be propelled under the water. When this is done, the water flowing out from the upper opening 8 causes equilibrium between the openings 12 and 8, and causes the boat to travel horizontally forward.

A boat having the required displacement relative to the weight of the material, preferably as illustrated, will normally float at the surface of the water. With the aforesaid relative displacement and weight, when the detent 31 is rocked to release the impeller 19, the rotation thereof will suck water

through the opening 12 into the passage 9 and out through the opening 8. The opening 8, is relatively smaller than the opening 12, and the reaction caused by water being impelled upwardly and through the opening 8, in the top of the boat, that is, the downward pressure of the water as it escapes through said opening, will draw the boat down below the surface of the water, and according to the velocity of the impeller 19 will draw the boat down to a greater or less depth, while the propeller 18 will propel the boat forward. As the power is spent, and the velocity of the impeller decreases the boat will gradually rise because of the buoyancy of the boat until it again reaches the surface of the water when the impeller 19 has come to rest.

The head 20 or the ballast plate 10 or both may be removed for applying new rubber bands when desired. The rudder 30 is adjustable in any direction, whereby the boat may be caused to travel in an arc of a circle.

I claim:

1. In a device of the character described, the combination of a hull; means for impelling water from the lower part of the hull to the upper part; and means for propelling the hull.

2. In a device of the character described, the combination of a hull; means for impelling water from the lower forward part of the hull to the upper rear part; and means for propelling the hull.

3. In a device of the character described, the combination of a hull provided with an upper opening, a lower opening, and a passage connecting said openings; a propeller exterior to the hull; and an impeller in said passage.

4. In a submersible toy, the combination of a hollow hull having an open front end, a closed rear end, a forward opening in its lower part, and an upper opening near its rear part; a ballast secured to the lower part; a propeller shaft disposed axially of the rear end and provided with a propeller at its rear part and an impeller between said openings; a winding head in said open end; and an elastic connecting said winding head with said shaft.

5. In a device of the character described, the combination of a hull provided with a rear upper opening, a forward lower opening and a passage connecting said openings; a shaft passing axially through the rear end of the hull and provided with a propeller on its rear part and an impeller in said passage; and means for rotating said shaft.

6. In a device of the character described, the combination of a hull provided with a rear upper opening, a forward lower opening, and a pasage connecting said openings; a shaft passing axially through the rear end of the hull and provided with a propeller on its rear part and an impeller in said passage; and an elastic band connecting said shaft with the forward end of the hull for rotating said shaft.

7. In a submersible toy, the combination of a hollow cylindrical hull having an open front end, a closed rear end, and an intermediate opening in its lower part and an upper opening near the rear of its upper part communicating with the interior of the hull; a ballast plate detachably secured in said intermediate opening and provided with a downwardly projecting keel and with a forward opening communicating with the interior of the hull; a propeller shaft passing axially through said closed end and provided with a hook at its forward end; a propeller on the rear part of said shaft; an impeller on said shaft just forward of said upper opening; a winding head rotatably frictionally mounted in said front end; a screw-eye projecting from the inner face of said head; and elastic bands stretched between said hook and eye.

8. In a submersible toy, the combination of a hollow cylindrical hull having an open front end, a closed rear end, and an intermediate opening in its lower part and an upper opening near the rear of its upper part communicating with the interior of the hull; a ballast plate detachably secured in said intermediate opening and provided with a downwardly projecting keel and with a forward opening communicating with the interior of the hull; a propeller shaft passing axially through said closed end and provided with a hook at its forward end; a propeller on the rear part of said shaft; an impeller on said shaft just forward of said upper opening; a winding head rotatably frictionally mounted in said front end; a screw-eye projecting from the inner face of said head; an imitation periscope projecting upwardly from the hull; a rudder frictionally adjustably mounted on said rear end; and elastic bands stretched between said hook and eye.

9. In a submersible toy, the combination of a hollow hull having an open front end, a closed rear end, a forward opening in its lower part and an upper opening near its rear part; a ballast secured to the lower part; a propeller shaft disposed axially of the rear end and provided with a propeller at its rear part and an impeller between said openings; means for holding the forward end of the shaft in alinement; a winding head in said open end; and an elastic connecting said winding head with said shaft.

10. In a device of the character described, the combination of a boat provided with means comprising a central passage and lower and upper openings in the boat com-

municating therewith for impelling water from the lower to the upper part of the boat.

11. In a device of the character described, the combination of a boat provided with means comprising a central passage and lower and upper openings in the boat communicating therewith for impelling water from the lower to the upper part of the boat; and means for propelling the boat.

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Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."