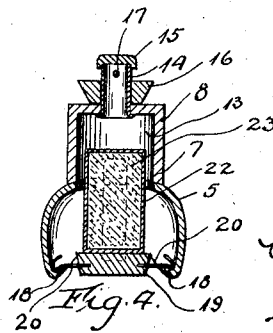
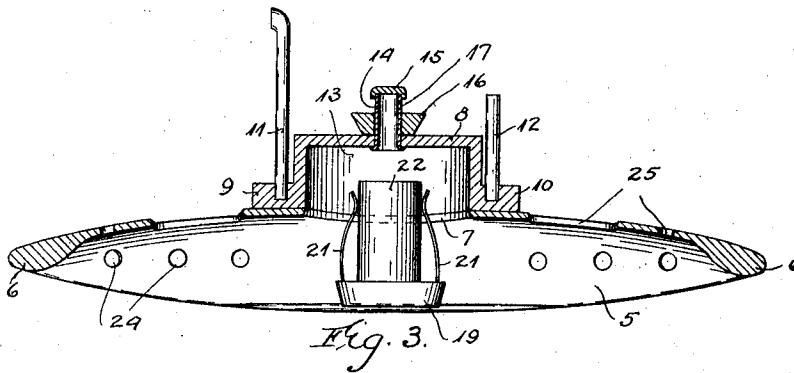
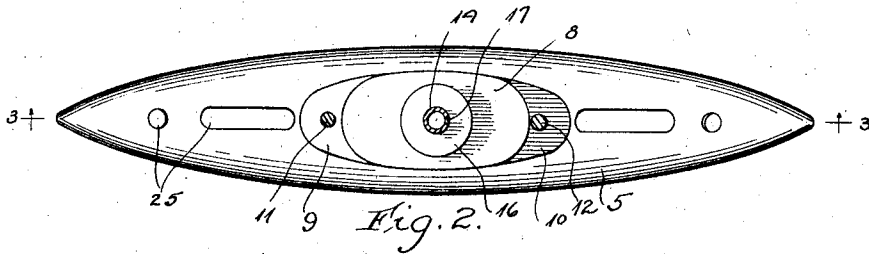
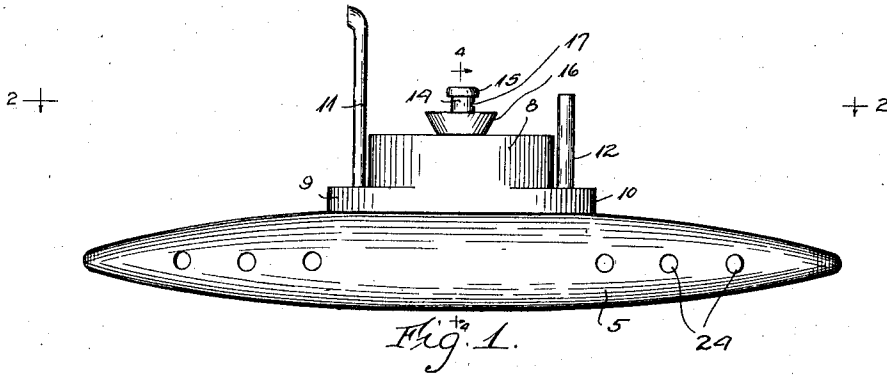


W. O. YANCEY.
TOY SUBMARINE.
APPLICATION FILED NOV. 2, 1918.

1,361,561.

Patented Dec. 7, 1920.



Inventor,
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UNITED STATES PATENT OFFICE.

WILLIAM OSCAR YANCEY, OF CHICAGO, ILLINOIS.

TOY SUBMARINE.

1,361,561.

Specification of Letters Patent.

Patented Dec. 7, 1920.

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To all whom it may concern:

Be it known that I, WILLIAM O. YANCEY, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Toy Submarines, of which the following is a specification.

My invention relates to toy submarines, particularly to that class in which gas generated within the hull causes the boat to emerge and venting of the gas causes the boat to submerge.

The invention involves several improved features of construction and arrangement all of which coöperate to make the toy interesting and fascinating.

On the accompanying drawing the various features of my invention are illustrated, and on this drawing—

Figure 1 is a side elevational view of a toy submarine,

Fig. 2 is a view from plane 2—2, Fig. 1,

Fig. 3 is a sectional view on plane 3—3, Fig. 2, and

Fig. 4 is a sectional view on plane 4—4, Fig. 1.

The boat comprises the hull 5 in the form of a shell which is entirely open at its bottom. This shell is of wood or other material lighter than water and the ends 6 are somewhat thickened to increase the strength and also to add flotation effort. In the top of the shell is the elliptical opening 7 surrounded by the dome or tower 8. This dome structure is also preferably of wood or material lighter than water and, as shown, is a separate structure secured to the hull, it being evident, of course, that the hull and dome structure could be formed from a single piece of material. Extensions 9 and 10 on the dome structure support pieces 11 and 12 representative of a periscope and stack. Extending upwardly at the center of the dome and communicating with the chamber 13 therein is the shaft tube 14 surmounted and closed at its upper end by the cap 15. Slidable on the tube between the dome and cap is the button valve 16. When the valve is in its lower position the vent opening 17 in the tube is exposed and when the valve is up this vent is closed.

At their lower edges the sides of the hull have internal beads or ledges 18 for supporting a combined weight and cartridge holder structure. This structure comprises an ob-

long weight block 19 of lead or other suitable weight material from whose sides sheet metal arms 20 extend laterally for engaging with the ledges 18 to support the weight structure. These arms are preferably of sheet metal and of sufficient width to keep the weight from tilting. Extending upwardly from the weight block are spring clip arms 21 for holding a cartridge or capsule 22 in upright position on the block. The capsule shown is cylindrical and comprises a wrapper or container 22' for chemical material 23 such as some sodium compound which, when moistened, will generate gas. The combined weight and cartridge structure is placed into the hull with the cartridge in line below the tube 14, the top of the cartridge container being first punctured for the entrance of water and the escape of gas. The boat is then placed on the water and as the weight of the block 19 exceeds the flotation value of the boat frame, the boat will gradually sink, any air within the chamber 13 escaping through the vent opening 17. The hull shell has the side ports 24 and top openings 25 which readily permit the escape of air from the hull and the entrance of water thereinto. After the boat has sunk a sufficient distance and all the air has been driven therefrom the valve 16, which is of material lighter than water, will be engaged by the water and will be raised to close the vent 17, the valve being preferably frusto-conical in order that it may be more readily floated by the water. By the time that the valve has been raised the chemical capsule will be submerged and water will enter its punctured opening and will attack the chemical, causing the generation of gas which will enter the chamber 13 and force water therefrom. After enough gas has been generated the buoyancy of the boat structure will have so increased that it will rise, and, as soon as the valve 16 emerges, it will drop to clear the vent 17 whereupon the gas will flow out of the chamber 13, the size of the port being such that the gas will escape a little faster than it can be generated. The ports 24 and openings 25 in the hull structure permit it to readily sink and emerge. After emersion of the boat and release of the buoyant gas, the weight 19 will again become effective to sink the boat and the valve 16 will again be raised and the chamber 13 will be filled with gas and the boat again caused

to rise and emerge, this alternate sinking and rising continuing until all the chemical in the capsule is spent.

The weight and cartridge supporting structure is readily shiftable along the ledges 18 so that this structure can be shifted to either side of the vertical center of gravity line of the boat, and by such shifting the boat assumes an inclined position and will glide through the water during sinking or rising, thus imitating the movements of submarines. The thickened ends 6 of the hull add stability to the boat as well as strengthening the ends thereof.

I do not, of course, desire to be limited to the exact construction, arrangement and operation shown and described, as changes and modifications are no doubt possible which would still come within the scope of the invention.

I claim as follows:

1. In a toy submarine, the combination of a hull having an air admitting opening, a gas chamber communicating with said hull, a vent opening for said chamber, a floatable valve for controlling said vent opening, and a chemical container detachably supported wholly within said hull below said chamber.

2. In a toy submarine, the combination of a frame having a gas chamber, a vent for said gas chamber, a floatable valve for controlling said vent, a weight structure within the frame, ledges within the frame on which said weight structure is adjustably supported, and a chemical container detachably supported on said weight structure below said chamber.

3. In a toy submarine, the combination of a boat frame having a gas chamber, a vent for said chamber, a floatable valve controlling said vent, ledges on the sides of said frame, a weight block within said frame, arms extending from said weight block and engaging with said ledges to support the block below said gas chamber for enabling shifting of said block, and a chemical container supported on said block.

4. In a toy submarine, the combination of

a boat frame having a gas chamber, a vent for said chamber, a floatable valve controlling said vent, ledges on the sides of said frame, a weight block within said frame, arms extending from said weight block and engaging with said ledges to support the block below said gas chamber for enabling shifting of said block, spring clips extending upwardly from said weight block, and a chemical container supported on said block by said clips.

5. In a toy submarine, the combination of a shell in the form of a hull open at its bottom and provided with air admitting openings along the sides thereof, said shell having a gas chamber at the top thereof, a vent for said gas chamber, a floatable valve controlling said vent, a supporting member adapted to be inserted through the open bottom of said hull, means for supporting said member at the bottom of said hull and below said chamber, and a chemical container detachably supported on said supporting member.

6. In a toy submarine, the combination of a hull in the form of a shell having an open bottom, a frame extension on said hull forming a gas chamber, a vent for said chamber, a floatable valve controlling said vent, ledges formed on the sides of said hull, a weight member supported by and shiftable along said ledges, and a chemical container supported on said weight member.

7. In a toy submarine, the combination of a hull in the form of a shell lighter than water and having an upward extension forming a gas chamber, a vent for said gas chamber, a valve for controlling said vent, a weight within the hull below said chamber, and a chemical container supported on said weight, said hull having top, side and bottom openings for the ready flow of water.

In witness whereof, I have hereunto subscribed my name this 25th day of October, A. D. 1918.

WILLIAM OSCAR YANCEY.