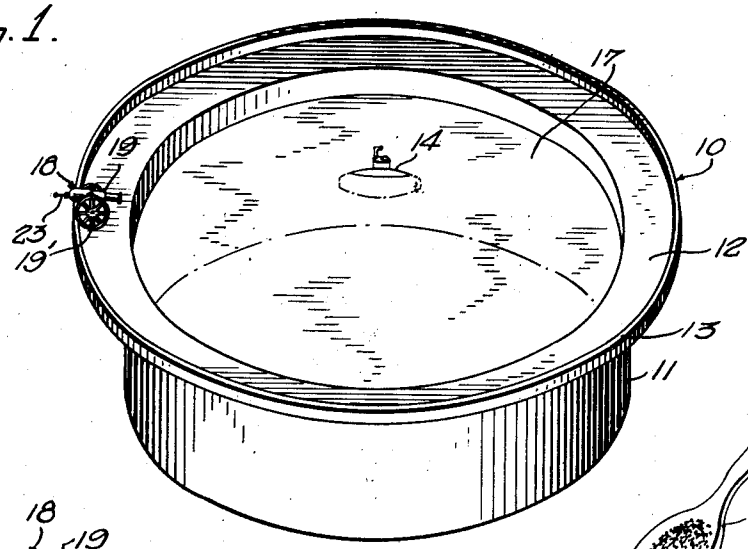
Oct. 20, 1942. D. C. McGAHEY 2,299,551

TOY

Filed May 3, 1940

Fig. 1.



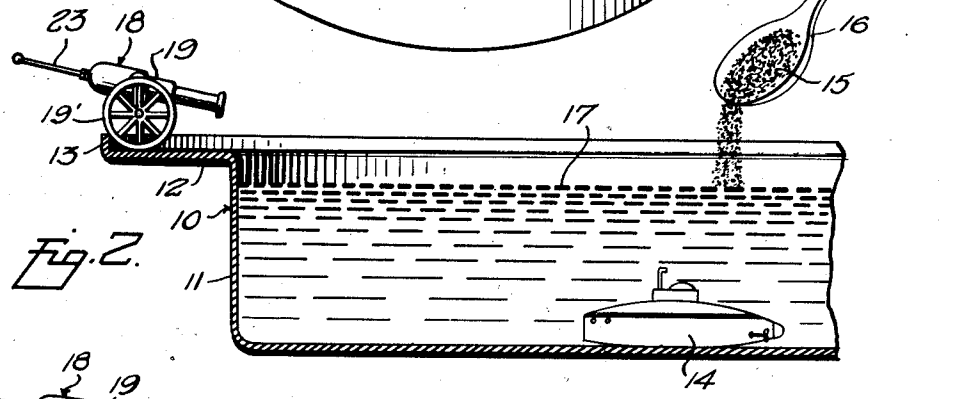


Fig. 2.

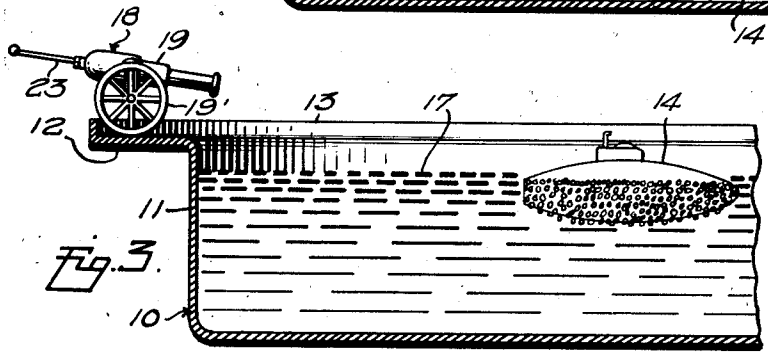


Fig. 3.

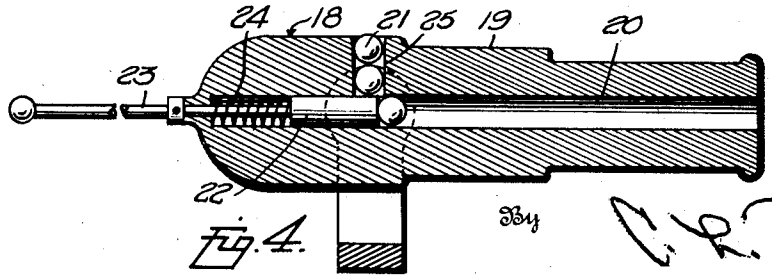


Fig. 4.

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TOY

Donald C. McGahey, Atlanta, Ga.

Application May 3, 1940, Serial No. 333,222

6 Claims. (Cl. 46—94)

This invention relates to toys and more particularly to a toy submarine.

An important object of the invention is to provide a novel and extremely simple toy which may be readily operated by a small child and by means of which a small boat representing a submarine may be sunk and then floated, and later by means of a projectile may be caused to sink again.

A further object is to provide such a toy wherein the sinking and floating of the toy submarine may be continued as long as desired.

A further object is to provide a toy of this character wherein the toy submarine is slightly heavier than the water or other liquid in which it is placed so that it normally sinks to the bottom and to provide novel means for generating gas bubbles which adhere to the hull of the submarine to cause it to float.

A further object is to provide a device of this character wherein the toy depends entirely upon the adhesion of the bubbles thereto to render it buoyant, and to provide the combination therewith of means for shooting a small projectile at the submarine and through which the striking of the submarine by the projectile jars it and shakes the bubbles loose therefrom whereby the submarine will sink due to its lack of buoyancy, thus creating an illusion of the submarine having been sunk by shell fire.

Other objects and advantages of the invention will become apparent during the course of the following description.

In the drawing I have shown one embodiment of the invention. In this showing:

Figure 1 is a perspective view of a suitable liquid container in connection with which the device may be used,

Figure 2 is an enlarged fragmentary vertical sectional view showing the submarine at the bottom of the container and the pouring of a suitable substance into the water to generate gas bubbles in contact with the submarine,

Figure 3 is a similar view showing the submarine with the bubbles adhering thereto and thus rendering it buoyant, and,

Figure 4 is a sectional view through a toy cannon which may be employed for shooting projectiles at the submarine.

Referring to Figure 1, the numeral 10 designates a suitable container in connection with which the device may be readily employed. It will become apparent that any suitable form of container may be used. In Figure 1 the container has been shown as an open topped receptacle 11 provided at its upper edge with an outstanding horizontal flange portion 12 of substantial width which may be turned upwardly as at 13 to form a peripheral flange for a purpose to be described.

The present device comprises a toy boat 14 preferably representing a submarine. This boat may be formed of any suitable material so long as the boat, as used in the manner to be described, has a slightly greater specific gravity than the water or other liquid in which it is used. For example, the boat may be made of wood, Celluloid or other plastic material, etc. If the boat is made of wood or other buoyant material, the finished boat is suitably weighted to render it slightly heavier than water. If the material employed is slightly heavier than water, the completed boat may be formed solely of such material. As will become apparent it is preferred that the finished boat be only slightly heavier than water, and accordingly it is preferred that no material be employed in the making of the boat which is substantially heavier than water.

From the foregoing it will be apparent that the boat when placed in the water will slowly sink to the bottom thereof, as shown in Figure 2. In order to render the submarine buoyant a suitable powder 15 (Figure 2) may be poured from a spoon 16 or the like into the body of water 17 in the container. The powder 15 may be any material or combination of materials which, in the presence of water, undergoes chemical reaction through which gas bubbles are liberated. For example, citric or tartaric acid may be employed together with sodium or magnesium carbonate, or any other one of several carbonates which will react with the acid to liberate carbon dioxide gas which, of course, will be liberated under the water in the form of bubbles. Preferably the powder employed does not react rapidly, it being preferred that the bubbles be liberated fairly slowly for a purpose which will become apparent. It also will be obvious that the material employed need not be in the form of loose powder, but may be compressed into spherical pellets or into any other desired shape.

Bubbles of the gas liberated in the vicinity of the submarine will adhere to the hull thereof, thus rendering the submarine buoyant so that it will float to the surface as shown in Figure 3. The present invention contemplates the provision of means for sinking the submarine as a part of the playing of the game. Any suitable means may be employed for shooting a projectile at the submarine. For example, a toy cannon

indicated as a whole by the numeral 18 may be employed for this purpose. The cannon comprises a barrel 19 which may be supported by wheels 19', and these wheels may rest upon the horizontal flange 12 and may be backed out into position against the flange 13 to assist in steadying the cannon while shooting. Obviously the barrel 19 may be swung upwardly and downwardly and the wheels 19' may be turned, in order to aim at the submarine.

The barrel 19 is provided with a bore 20 through which projectiles 21 may be shot from the cannon by a plunger 22 connected to a rod 23 and urged toward firing position by a spring 24. The barrel may be provided with a vertical opening 25 serving as a magazine for the pellets or projectiles 21 and these projectiles will be shot one at a time each time the plunger 22 is pulled rearwardly and released. The use of a magazine for the projectiles forms no part of the present invention and may be of any desired type.

The operation of the toy is as follows:

The receptacle 11 is filled with a suitable liquid, preferably water, and the submarine 14 is placed in the water and will sink to the bottom of the container because of its non-buoyant nature. The submarine, as previously stated, preferably is only slightly heavier than water and accordingly its buoyancy need be increased only slightly in order to cause it to float to the surface of the water. This is accomplished by pouring some of the powder 15 into the container as shown in Figure 2, much of the powder sinking to the bottom of the container and releasing bubbles due to the reaction between the materials employed. A number of these bubbles, of course, will adhere to the surface of the submarine, thus rendering it buoyant and the submarine will rise to the surface of the water as shown in Figure 3.

The child playing with the toy will then endeavor to sink the submarine by using the cannon 18. With one or more projectiles in the cannon the child will take aim at the submarine, pull rearwardly on the rod 23 and then release the rod, whereupon the plunger 22 will snap forwardly and strike the projectile in position in the bore 20. The projectile will be shot from the cannon and if the child's aim has been accurate, the projectile, which is relatively heavy, will strike the submarine and jar it, thus causing the gas bubbles adhering thereto to be jarred loose from the hull of the submarine and float to the surface of the water. If the submarine has been hit squarely all of the bubbles will be jarred loose from the submarine, or a sufficient number will be jarred loose, to destroy the buoyancy of the boat, whereupon it will sink. This obviously gives the illusion of the submarine having been sunk by shell fire.

If a powder 15 or other material has been employed whose chemical reaction takes place relatively slowly, additional bubbles will adhere to the submarine after the latter sinks, thus causing it to shortly rise again to the surface of the water. If the generation of bubbles has ceased, more of the powder 15 or some of the same material in pellet form may be placed in the water to repeat the operation of causing the boat to become buoyant. The shooting of the cannon again may be repeated, to jar the bubbles loose from the submarine and again cause it to sink.

The device forms a very amusing toy for use by children. If desired, the device may be used as a game by keeping a score of the shots made by each of two or more children, the winner being the child who has sunk the submarine a given number of times with the least number of shots from the cannon. Obviously the toy may be repeatedly used and, aside from the cannon, will never wear out. The cannon may be of any desired simple construction which will withstand hard usage, and any form of projectile shooting means may be employed in place of the cannon.

It is to be understood that the form of the invention herewith shown and described is to be taken as a preferred example of the same and that various changes in the shape, size and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claims.

I claim:

1. A toy comprising a boat having a specific gravity greater than water whereby it will sink in a body of water, and means for creating bubbles in the water in the vicinity of said boat whereby some of the bubbles will adhere thereto and create therewith a combined body having a specific gravity less than that of water whereby it will float to the surface of the latter.

2. A toy comprising a boat having a specific gravity greater than water whereby it will sink in a body of water, and a chemical mixture which, when dropped into the body of water, will react to liberate bubbles of gas which will adhere to said boat to create therewith a combined body having a specific gravity less than that of the water whereby it will float to the top thereof.

3. A toy comprising a boat having a specific gravity greater than water whereby it will sink in a body of water, means for rendering said boat buoyant whereby it will float to the surface of the water, and means for rendering said last named means ineffective whereby the boat will again sink to the bottom of the water.

4. A toy comprising a boat having a specific gravity greater than water whereby it will sink in a body of water, means for rendering said boat buoyant whereby it will float to the surface of the water, and means for propelling toward said boat a projectile capable of rendering said last named means ineffective for rendering the boat buoyant whereby the boat will sink to the bottom of the water.

5. A toy comprising a boat having a specific gravity greater than water whereby it will sink in a body of water, means for creating bubbles in the water in the vicinity of said boat whereby some of the bubbles will adhere thereto and create therewith a combined body having a specific gravity less than that of water whereby it will float to the surface of the latter, and means for jarring said boat to dislodge the bubbles therefrom whereby the boat will sink to the bottom of the water.

6. A toy comprising a boat having a specific gravity greater than water whereby it will sink in a body of water, a chemical mixture which, when dropped into the body of water, will react to liberate bubbles of gas which will adhere to said boat to create therewith a combined body having a specific gravity less than that of the water whereby it will float to the top thereof, and means for jarring said boat to dislodge the bubbles therefrom whereby the boat will sink to the bottom of the water.

DONALD C. McGAHEY.