O. E. WALL.

TOY BOAT.

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1,306,362.

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Fig. 1.

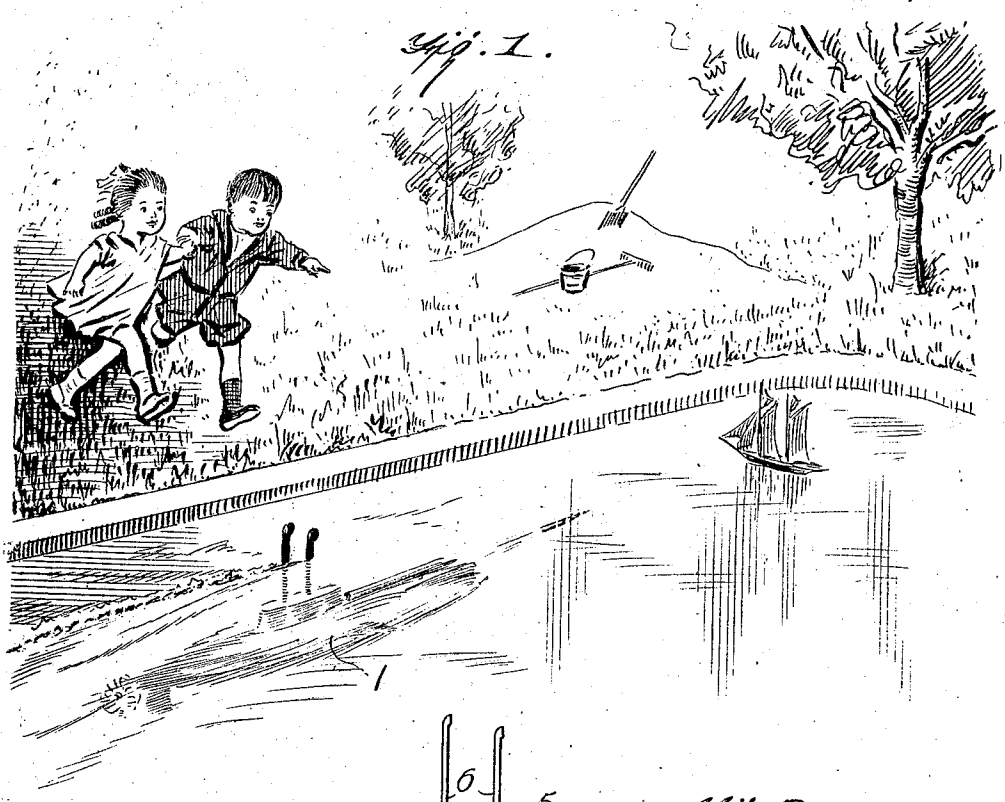


Fig. 2.

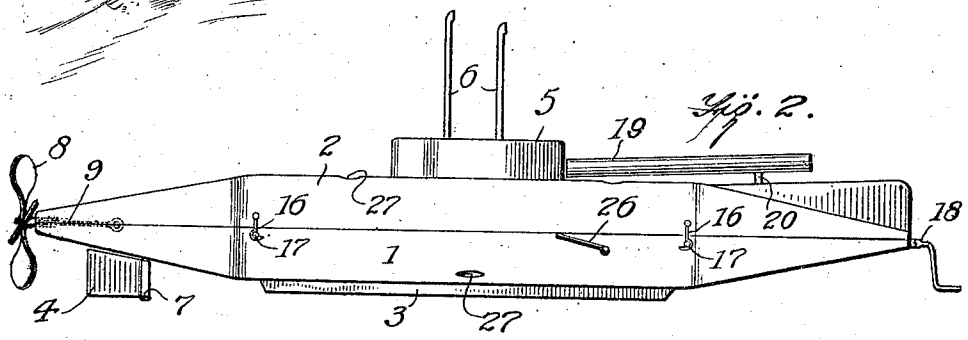


Fig. 4.

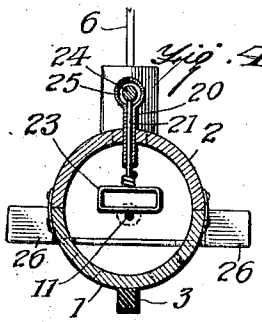


Fig. 3.

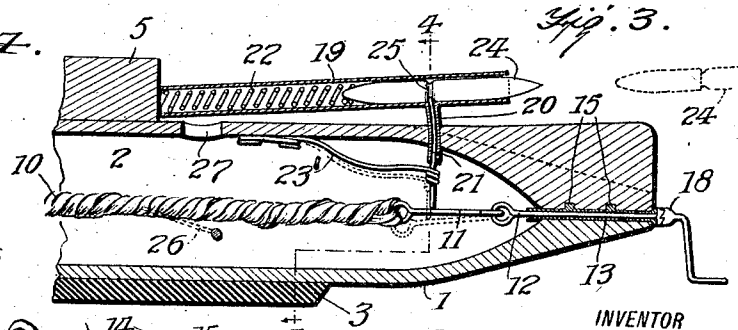
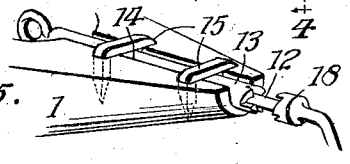


Fig. 5.



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TOY BOAT.

1,306,362. Specification of Letters Patent. Patented June 10, 1919.

Application filed July 9, 1917. Serial No. 179,361.

To all whom it may concern:

Be it known that I, ORMOND E. WALL, a citizen of the United States, and a resident of Honolulu, in the Territory of Hawaii, have invented new and useful Improvements in Toy Boats, of which the following is a specification.

My invention is an improvement in toy boats, and has for its object to provide a boat of the character specified, having a propeller and a spring for driving the same, and having means for tensioning the spring, the boat having a spring-controlled gun mounted on its deck, and having means in connection with the gun and controlled by the tensioning of the spring for holding a projectile in the gun with the spring under compression, to release the projectile and spring when the spring is relaxed.

In the drawings:

Figure 1 is a perspective view showing the operation of the boat;

Fig. 2 is a side view of the boat;

Fig. 3 is a partial longitudinal section of the boat;

Fig. 4 is a section on the lines 4—4 of Fig. 3, looking in the direction of the arrows adjacent to the line;

Fig. 5 is a perspective view of the bow of the boat, showing the ratchet mechanism for preventing the reverse movement of the crank when tensioning the spring.

In the present embodiment of the invention, the boat is shaped to represent a submarine or submersible, and consists of a lower section 1 and an upper section 2, the lower section carrying a keel 3 and a rudder 4, while the upper section carries a superstructure 5 having periscopes 6.

The rudder 4 is connected to a shaft 7 and the said rudder is set to drive the boat straight ahead, although it is obvious that it might be set to turn the boat in a circle.

A propeller 8 of relatively large size is journaled at the stern of the boat, between the sections, the said sections having coöperating bearings for holding the propeller, and the shaft 9 of the propeller is provided with an eye, as shown, to which is connected one end of a series of rubber bands 10, the said bands forming the motor for driving the propeller. At their opposite ends these bands are connected by a link 11 with the inner end of a crank shaft 12, which is journaled in a bearing sleeve 13 at the bow, the crank portion of the crank shaft being outside the bow. Thus when the crank is turned the spring constituted by the rubber bands may be placed under tension to drive the propeller, it being understood that the propeller is held while the spring is tensioned.

This bearing sleeve 13 is held in a groove 14 in the lower section by means of staples 15, and it will be noticed that the upper section is grooved to receive the staples, so that the staples and grooves assist in positioning the sections, and in preventing longitudinal movement of the sections with respect to each other.

The sections are held together by means of hooks 16 on the upper section which engage screws 17 on the lower section, and four hooks and four screws are provided in the present instance. The outer end of the sleeve 13 has ratchet teeth, as shown in Fig. 5, and the crank has a collar 18 also provided with ratchet teeth for coöperating with the teeth of the sleeve to prevent reverse rotation of the crank shaft.

A spring gun is mounted on the submarine deck, the said gun comprising a barrel 19 having a tubular extension 20 which passes through an opening in the hull of the boat and into the hull, communicating at its upper end with the barrel and at its lower end with the hull.

A pin 21 is mounted in the extension, the upper end of the pin being adapted to extend into the barrel to engage the projectile to hold the spring 22 of the gun under tension. This pin has at its lower end a cross head 23 which is a substantially rectangular frame and which has a lower bearing surface, and is adapted to rest on the link 11 so that when the spring is under tension, as indicated in full lines in Fig. 3, the pin 20 will engage the projectile to hold the spring 22 under tension. This pin 20 is connected to a spring arm 23′ secured to the upper section, and the arm normally tends to move the pin downwardly as soon as the tension of the propelling spring relaxes sufficiently.

In the present instance, the projectile 24 has an annular groove 25 which the pin is adapted to engage. This groove is intermediate the ends of the projectile, and the said ends are pointed, as shown.

In operation, the propelling spring is wound or tensioned by the crank shaft. The projectile is now placed in the gun and the tension of the propelling spring will move the pin 20 upwardly to engage the groove 25,

to hold the projectile in the gun and to hold the spring 22 under tension. When the propeller is released, it will drive the boat rapidly through the water, and as soon as the tension of the spring is sufficiently released to permit, the pin will be moved downwardly to release the projectile, which will be driven from the barrel by the spring.

By providing vanes on the boat, that is, horizontal rudders, the boat may be made to dive, to simulate a submarine. The said vanes are indicated at 26 and are secured to the opposite sides of the boat near the front, and they incline upwardly toward their rear ends. Now when the boat, with the spring under tension and with the propeller held, is placed in the water, the boat will dive, as indicated in Fig. 1, under the influence of the forward drive of the propeller and the downward pull of the rudders, and as the spring relaxes the projectile, which now simulates a torpedo, is discharged. As soon as the boat ceases to be driven it will rise to the surface.

It will be noticed that the propeller is of relatively large size, thus acting as a species of gearing or governor to prevent the too rapid relaxation of the spring.

The improved boat may be constructed of wood, in which case it is provided with openings 27 to admit the water, and it is so balanced that it must be filled or partially filled with water to release the propeller. If made of metal, there will be hermetically sealed air compartments in the upper half, for buoyancy. The torpedo tube or gun 19 is pivotally mounted on the tube 20, in order that it may be swung to either side to discharge in practically any direction.

The diving vanes 26 are secured to a shaft arranged transversely of the vessel, as will be evident from a consideration of Fig. 4, and this shaft is frictionally held in the boat, so that the vanes may be set at various angles. For instance, by inclining the vanes in the opposite direction to that shown in Fig. 2 the boat will travel on the surface of the water.

I claim:

1. A boat having a propeller at the stern, a crank at the bow, a series of rubber bands connected at one end to the propeller, a link connecting the other end of the series to the crank, means for preventing reverse rotation of the crank, a barrel having a depending tube between its ends journaled in the deck of the boat and extending into the hull adjacent the link, a pin in the tube and having a cross head at its lower end resting on the link and extending into the bow when the spring is under tension, a projectile having an annular groove for engagement by the pin when the spring is under tension and released by the relaxation of the spring, and a spring for expelling the projectile, the pin holding the projectile with the spring under tension, and inclined rudders on the boat for causing the same to dive when the propeller is running.

2. A boat having a propeller at the stern, a crank at the bow, a series of rubber bands connected at one end to the propeller, a link connecting the other end of the series to the crank, means for preventing reverse rotation of the crank, a barrel having a depending tube between its ends journaled in the deck of the boat and extending into the hull adjacent the link, a pin in the tube and having a cross head at its lower end resting on the link and extending into the bow when the spring is under tension, a projectile having an annular groove for engagement by the pin when the spring is under tension and released by the relaxing of the spring, and a spring for expelling the projectile, the pin holding the projectile with the spring under tension.

3. A boat having a propeller at one end, a crank at the other, and a spring connecting the crank to the propeller and tensioned by the turning of the crank in one direction, and means for preventing reverse rotation of the crank, a spring gun on the deck, a pin extending into the barrel of the gun for engaging a projectile to hold the spring under tension, said pin being engaged at its lower end by the spring to hold the same in proper position when the spring is tensioned and to release the projectile when the spring is relaxed, and means in connection with the boat for constraining the same to dive when the propeller is turning.

4. A boat having a propeller at one end, a crank at the other, and a spring connecting the crank to the propeller and tensioned by the turning of the crank in one direction, and means for preventing reverse rotation of the crank, a spring gun on the deck, a pin extending into the barrel of the gun for engaging a projectile to hold the spring under tension, said pin being engaged at its lower end by the spring to hold the same in proper position when the spring is tensioned and to release the projectile when the spring is relaxed.

5. A boat having a propeller at one end, a crank at the other, and a spring connecting the crank to the propeller and tensioned by the turning of the crank in one direction, and means for preventing reverse rotation of the crank, a spring gun on the deck, a pin extending into the barrel of the gun for engaging a projectile to hold the spring under tension, said pin being engaged at its lower end by the spring to hold the same in proper position when the spring is tensioned and to release the projectile when the spring is relaxed, and means in connection with the boat for constraining the same to move upon the surface or to dive beneath the same when

the propeller is turning, said means comprising a shaft mounted transversely of the boat and frictionally held, and provided on either end with a vane, said vanes being similarly arranged.

6. A boat having a propeller at one end, a crank at the other, and a spring connecting the crank to the propeller and tensioned by the turning of the crank in one direction, and means for preventing reverse rotation of the crank, a spring gun on the deck, a pin extending into the barrel of the gun for engaging a projectile to hold the spring under tension, said pin being engaged at its lower end by the spring to hold the same in proper position when the spring is tensioned and to release the projectile when the spring is relaxed, and means in connection with the boat for constraining the same to move upon the surface or to dive beneath the same when the propeller is turning.

7. A boat having a spring controlled propeller, a spring operated gun, a pin extending into the barrel of the gun for engaging a projectile to hold the spring under tension, and means controlled by the relaxing of the propeller spring for moving the pin to release the projectile.

8. A boat having a spring operated propeller and a spring controlled gun, and means controlled by the spring of the propeller for controlling the spring gun.

9. A boat comprising a hollow hull composed of upper and lower sections detachably connected together, a propeller, and operating mechanism for rotating the propeller arranged within the lower section, said mechanism being spring-operated, and means extending outside of the boat and connected with the lower section for controlling the operating means.

10. A boat comprising a hollow hull composed of upper and lower sections abutting at their adjacent edges to form a closed chamber within the hull and detachably connected together, said sections having openings for permitting the entrance of water for the purpose specified.

11. A boat comprising a hollow hull composed of upper and lower sections abutting at their adjacent edges throughout their extent and forming a closed chamber within the hull, said sections having openings for permitting the entrance of water to expel the air and fill the hull with water ballast.

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