H. T. & E. J. KINGSBURY.

AQUATIC TOY.

APPLICATION FILED JAN. 2, 1918.

1,268,016.

Patented May 28, 1918.

2 SHEETS—SHEET 1.

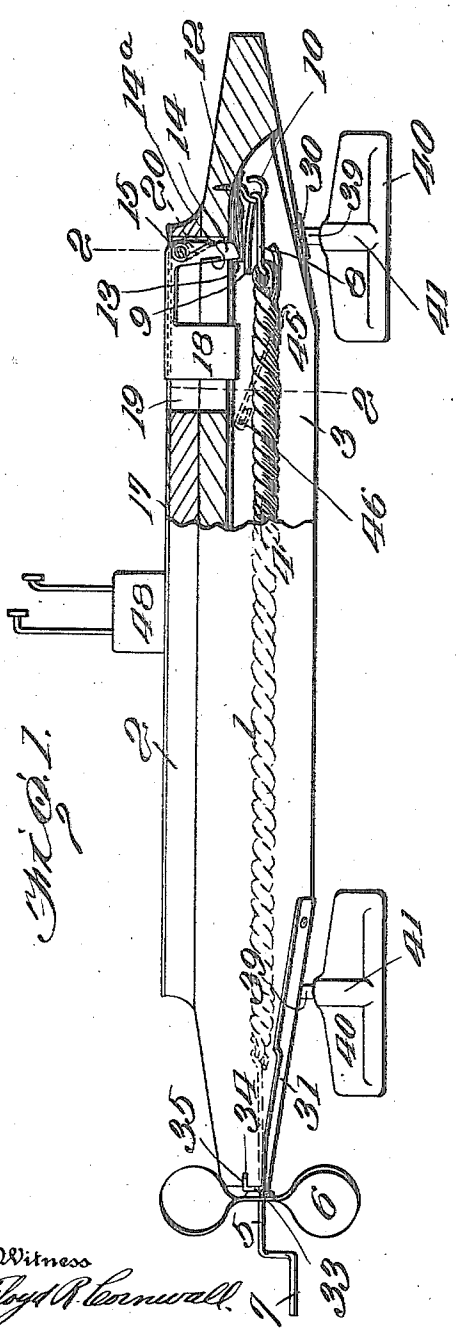


Fig. 1.

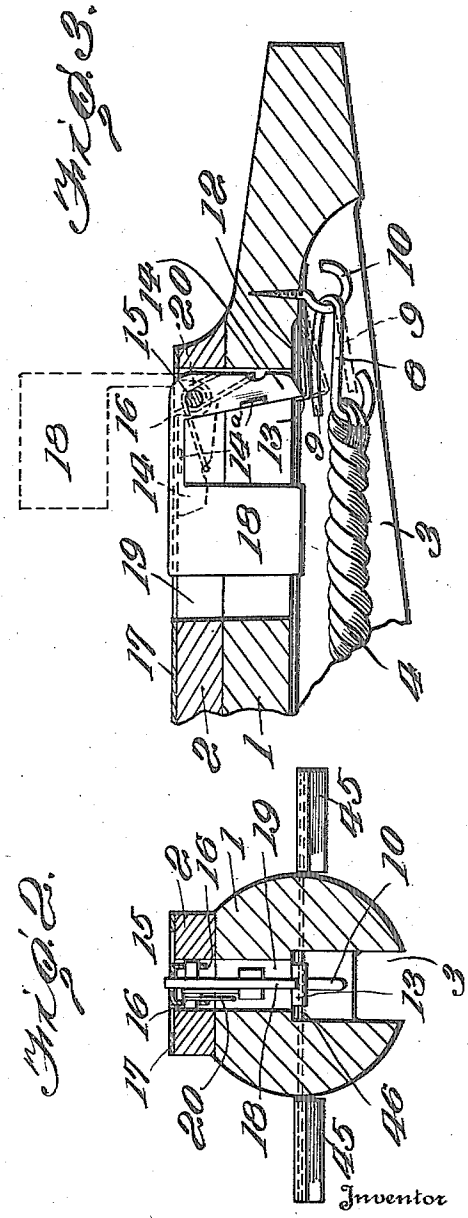


Fig. 3.

Fig. 2.

Witness

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2 SHEETS—SHEET 2.

Fig. 4.

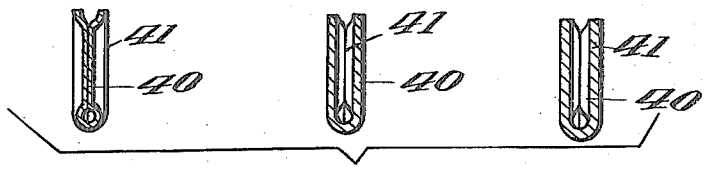


Fig. 5.

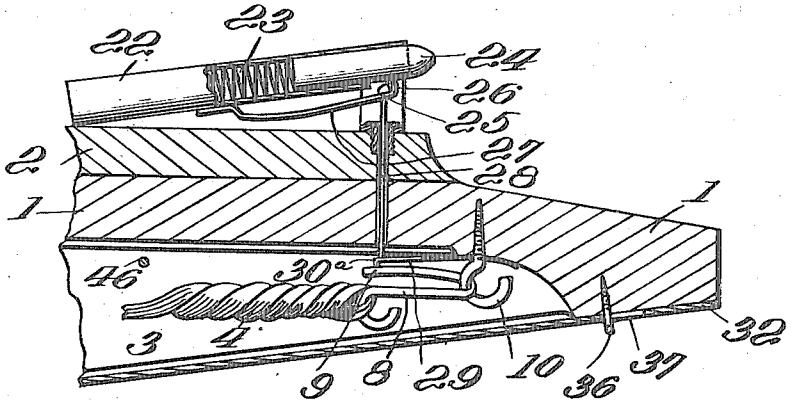
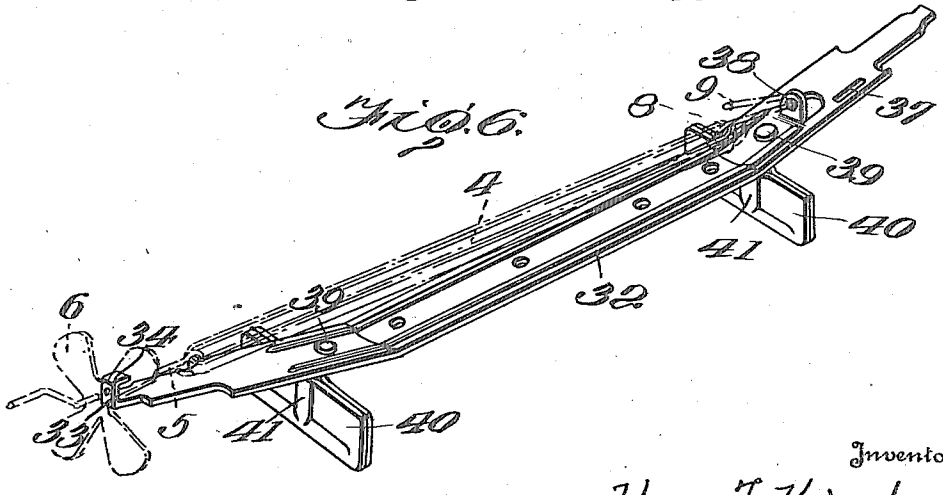


Fig. 6.



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UNITED STATES PATENT OFFICE.

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AQUATIC TOY.

1,268,016. Specification of Letters Patent. Patented May 28, 1918.

Application filed January 2, 1913. Serial No. 209,914.

To all whom it may concern:

Be it known that we, HARRY T. KINGSBURY and EDWARD J. KINGSBURY, citizens of the United States, residing at Keene, in the county of Cheshire, State of New Hampshire, have invented certain new and useful Improvements in Aquatic Toys, of which the following is a description, reference being had to the accompanying drawing and to the figures of reference marked thereon.

Our invention relates to toys of the type employing a torsional spring for the part to be actuated and particularly to submersible toys or toy submarines.

The objects of the invention are to improve the construction of the hull by forming the lower main portion of a solid piece of heavy or dense wood on the upper side of which is secured permanently an upper section of wood of less density or weight; to provide pivoted steering rudders at both ends of the hull so that it will in operation turn in much shorter circles than where a single stern rudder is employed, and will also be held to run on an even keel; also to provide at one end of the torsional spring a rock-shaft which is pivoted at the outer end to turn sufficiently to cause an offset arm, extension, or member thereof to move upwardly as the spring is wound and lift a catch into position to restrain a supplemental device in its inactive position until the torsional spring has partially expended its force, whereupon the rock shaft will turn in an opposite direction and so permit its arm, extension or member to move away from and release the said catch and supplemental device restrained thereby; such supplemental device being shown in one instance as a flag and in another as a gun or torpedo tube; also to provide a solid hull submersible boat with a longitudinal groove or recess along its keel to contain the torsional spring, the propeller shaft and the said rock shaft; also to mount the said operating parts upon a cover or keel which will extend longitudinally, over and cover the groove or recess in the hull or body; also to provide interchangeable rudders of different weights by means of which the hull may be balanced to a nicety; also to provide a flag adapted to be projected above the deck or upper side of the hull when its catch or detent is released by the beforementioned rock shaft; also to provide rudders of novel construction.

These objects we attain by the construction shown in the accompanying drawings in which,—

Figure 1 is a sectional side elevation of a submersible toy containing our improvements;

Fig. 2 is a cross section on line 2—2 of Fig. 1;

Fig. 3 is an enlarged longitudinal vertical section with the flag in the lowered position, in full lines, and in raised position in dotted lines;

Fig. 4 shows in cross section rudders made of different thicknesses or gages of sheet metal and adapted to be slipped on and off of the rudder shafts;

Fig. 5 is a longitudinal section of our improved submersible toy showing a torpedo gun or tube instead of a flag controlled from the rock shaft;

Fig. 6 is a perspective of a keel plate to cover the groove containing the torsional spring and its attached parts and also carrying the two rudders.

The cigar shaped hull of the boat is designated by the numeral 1 and is formed of a solid block of dense or heavy wood such as white birch, which will not readily absorb water. White birch is an ideal wood to machine but it is so heavy that little weight may be added at the bottom and consequently the center of gravity is so near the center of the hull that the reactive force of the propeller will cause the hull to revolve on its longitudinal axis or careen. We overcome this difficulty by securing permanently a deck plate 2 of white pine or other suitable light wood to give added buoyancy to the top and so permit of a suitable amount of weight to be added to the bottom such as the operating mechanism, rudders and bearings therefor. A solid hull of two woods of different specific gravity is thus formed which will allow of running on an even keel straight ahead, or on a curved course as well as providing a hull that will submerge perfectly.

Along the bottom or keel a groove or channel 3 is formed, within which is mounted a torsional spring 4, one end of which is se-

cured to an eye or hook on the inner end of a shaft 5 which carries at its outer end a propeller 6, and an operating crank 7. The opposite end of the spring 4 is secured to an eye or hook on the inner end of a short rock shaft 8 provided at one side with an arm or extension 9, hooked through a screw eye 10 or other fixed bearing. This rock shaft 8 is shown as formed like a hook; the free end of the hook forming the arm or extension 9 which, when the shaft is partially rotated or rocked in one direction, will raise a detent spring 12 secured in place by the screw eye 10 or otherwise. The hooked end 13 of the spring engages the end of an angle arm 14 pivoted at 15 in the ears 16—16 of an attaching plate 17 secured to the upper side of the hull 2; said hull having a vertical slot 19 in which the angle arm 14 and flag 18 carried thereby work. The flag 18 is projected upwardly out of the slot 19 into operative position by a spring 20 bent around the pivot 15, with one end engaging arm 14 and the other bearing against the adjacent end wall of the slot 19, as shown in Fig. 1. Normally the arm or extension 9 of rock shaft 8 will lie in the same horizontal plane therewith but upon winding the torsional spring the shaft 8 will be gradually turned or rocked to raise its arm 9, upwardly under the spring detent 12 and cause the hook 13 thereof to engage the end of the angle arm 14 of flag 18 which has been forced down against the action of the spring 20. The parts will be so held until the torsional spring 4 has unwound sufficiently, in operating the propeller, to cause an opposite rocking of the shaft 8 and its arm 9 which in turn will permit the spring detent 12 to release the angle arm 14 whereupon spring 20 will raise the flag 18 and bring a stop lug 14^a up against the lower face of plate 17. Any other device may be liberated by the rock shaft 8 and its arm 9 and in Fig. 5, we have illustrated a torpedo as the device controlled. In this figure the gun or tube 22 is mounted to turn on the deck and has a compression spring 23 to project a torpedo 24. The torpedo has a lug or pin 25 or other means to be engaged by the hooked end 26 of a spring 27 extending along the lower side of the gun or tube.

A vertically movable pin 28 extends from the underside of the spring 27 to the upper side of a spring 29 secured in the hull with its hooked free end 30^a projecting downwardly into engagement with the arm 9 of rock shaft 8; the spring 29 being actuated to raise the pin 28 to hold the spring 27 in engagement with the lug or pin 25 on the torpedo until the torsional spring has run down or unwound sufficiently to cause the opposite rotation of the shaft 8 to move the arm 9 downwardly and operate spring 29 to lower pin 28 and allow it to release the torpedo retaining spring 23. We do not claim as our invention this torpedo gun or tube, the pin 28 nor the springs 27—29.

The rock shaft 8 and its arm 9 are very effective in their action of controlling the auxiliary device, for the shaft will be rocked in both the winding and unwinding of the torsional spring regardless of the longitudinal or pulling strain of the torsional spring for it is the torsional strain that gives effectiveness to the rock shaft 8—9 which is obviously wholly different from a longitudinal strain on a straight, pivoted link used for the same purpose, since with a straight link a too short torsional spring would not allow said link to sag down below the spring controlling the release of the torpedo or flag, nor would such a link move such a spring upwardly as effectively as would the arm on our rock shaft.

In Fig. 1 the bottom plate or cover for the groove or channel 3 does not extend from end to end thereof but merely covers the ends thereof, it being in two sections 30, 31, but in Figs. 5 and 6 the cover plate 32 extends the full length of the groove or channel and has at one end an upturned end plate 33 in which the propeller shaft 5 is journaled. Extending inwardly from the upper edge of the end plate 33 is a flange 34 which extends into a transverse notch 35 in that end of the hull 1. The lower side of the opposite end of the hull is provided with a suitable turn button or catch 36 adapted to pass through a slot 37 in the cover plate 32 and hold it removably in place. The cover plate may also have struck up therefrom a hooked arm 38 and take the place of the screw eye 10 to which the rock shaft 8 is pivotally connected, as in Fig. 6. Near each end of the cover plate 32 there is a depending rudder post 39 and secured detachably and adjustably to said posts 39 are the two rudders 40 40.

The rudders 40 are each formed from a single piece of sheet metal folded upon itself with central half round openings 41—41 extending from its upper edge downwardly. Thus the spring action of the folded metal will cause the rudders to frictionally grasp the rudder posts so that they may be adjusted in longitudinal alinement for straight running or set at the proper angle for causing the boat to turn in circles of greater or less diameter. We provide rudders of different thicknesses of metal so that by changing the rudders the hull may be nicely adjusted as to the depth it shall lie upon the water.

The boat will be enabled to submerge by means of the two connected horizontal rudders 45—45 mounted on a transverse shaft 46 extending through the hull 1. A dummy periscope and conning tower is shown at 48.

We do not restrict ourselves to the use of our torsional spring and the rock shaft

and its arm or extension to the driving and control of a propeller and flag or gun as the main and supplemental parts of other toys may be driven and controlled thereby.

Having thus described our invention, what we claim as new and desire to secure by Letters Patent, is:—

1. In a submersible toy boat, a hull formed from a piece of hard or dense wood and having a deck or upper section of lighter wood to give greater buoyancy and stability.

2. In a submersible boat, a hull formed from a piece of hard or dense wood channeled along the keel, and a deck or upper section of lighter wood to give greater buoyancy and stability, and a torsional spring motor lying within said channel.

3. In a floating toy, a wood body or hull having a longitudinal groove or recess along its bottom to wholly contain a motor and a deck or upper section of lighter wood than the body or hull to give greater buoyancy and stability.

4. In a submersible toy boat, a solid wooden hull provided with a longitudinal channel along its keel, a torsional spring extending along said channel, a propeller at one end of the channel connected to said spring, a rock shaft pivoted at the opposite end of said channel and connected to the other end of said spring for partial rotation thereby; the rock shaft having an arm or extension at one side and a supplemental device controlled by said rock shaft.

5. A toy boat having a propeller, a torsional spring connected at one end thereto, a rock shaft connected at one end to the opposite end of said torsional spring and provided with an arm or extension at one side, and a supplemental device controlled by the partial rotation of said shaft.

6. A toy boat having a propeller, a torsional spring connected at one end thereto, a rock shaft connected to the opposite end of the said torsional spring and provided with an arm or extension, a spring detent secured at one end and extending at its free end into the path of said arm or extension for operation thereby, a pivoted flag-carrying arm held retracted by said spring detent when the torsional spring in being wound causes the rock shaft to rotate in one direction to raise the spring detent; the unwinding of the torsional spring permitting reverse rotation of the rock shaft and release of said detent.

7. A toy having a main and a supplemental element or device to be operated, a torsional spring for operating the main element or device, a rock shaft connected to one end of the torsional spring for partial rotation thereby and having an arm or extension controlling the supplemental element or device.

8. A toy boat having propelling mechanism and depending stationary rudder posts at its opposite ends, vertically disposed rudders having sockets frictionally engaging said posts whereby they may be adjusted at any desired angle.

9. In a toy boat, a rudder formed from a sheet of metal folded longitudinally upon itself and formed with half round rudder post sockets in its abutting faces.

10. A toy boat provided with fore and aft interchangeable depending vertically disposed rudders of varying weight for the perfect balancing and steering of said boat.

11. A toy boat having a solid wooden body or hull provided with a channel along its keel, a removable cover plate for said channel provided with attaching means, a propeller mounted on one end of the cover plate, a torsional spring secured at one end to the propeller shaft, a pivoted rock shaft secured at one end to the opposite end of the torsional spring for partial rotation thereby, and having an arm or extension at one side, and a supplemental device on the hull controlled by said arm or extension.

12. A toy boat having a solid wooden hull provided with a channel along its keel, a removable cover plate for said channel provided with attaching means, a propeller mounted on one end of the cover plate, a torsional spring connected at one end to the propeller shaft, a pivoted rock shaft connected to the opposite end of the torsional spring for partial rotation thereby and having a lateral arm or extension, a supplemental element or device controlled by said lateral arm, depending posts on the lower side of the cover plate, and vertically disposed rudders frictionally mounted between their ends on said posts for horizontal adjustment.

In testimony whereof, we affix our signatures, in the presence of two witnesses.

HARRY T. KINGSBURY.
EDWARD J. KINGSBURY.

Witnesses:
H. I. CHANDLER,
L. G. LITCHFIELD.