

Aug. 16, 1960

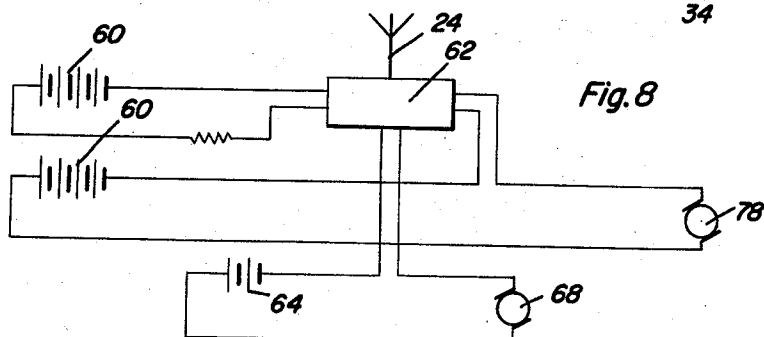
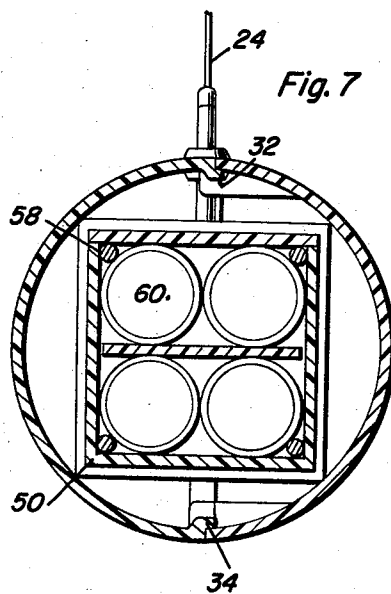
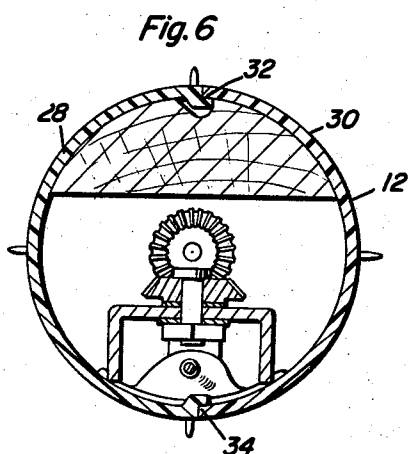
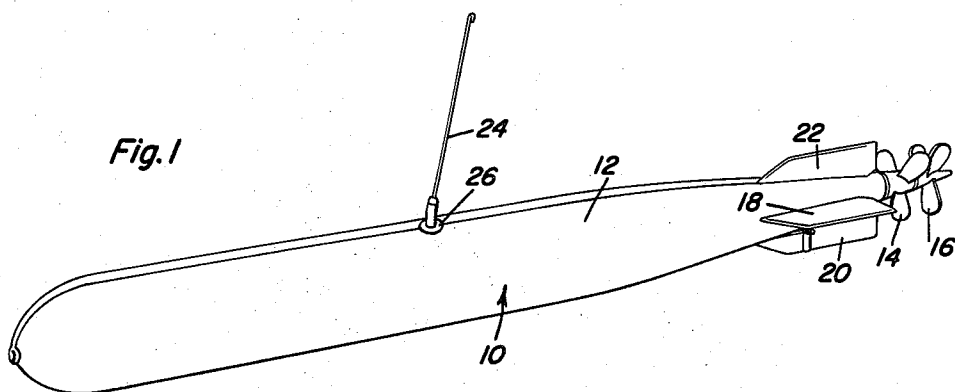
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2,949,089

RADIO CONTROLLED TORPEDO

Filed Dec. 3, 1957

3 Sheets-Sheet 1



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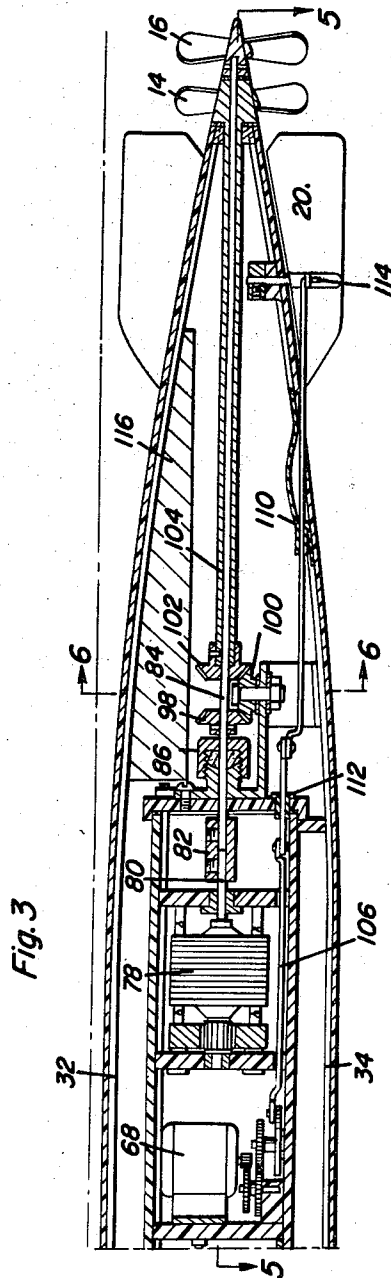
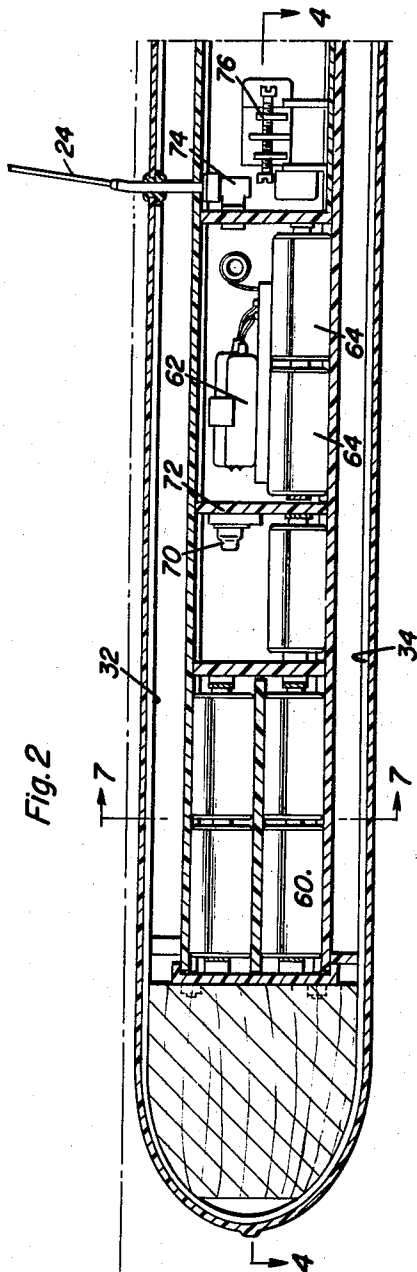
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RADIO CONTROLLED TORPEDO

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3 Sheets-Sheet 2



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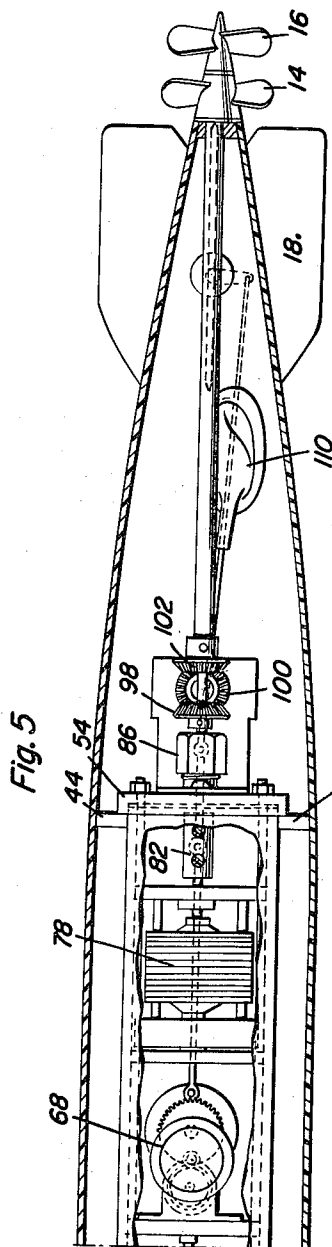
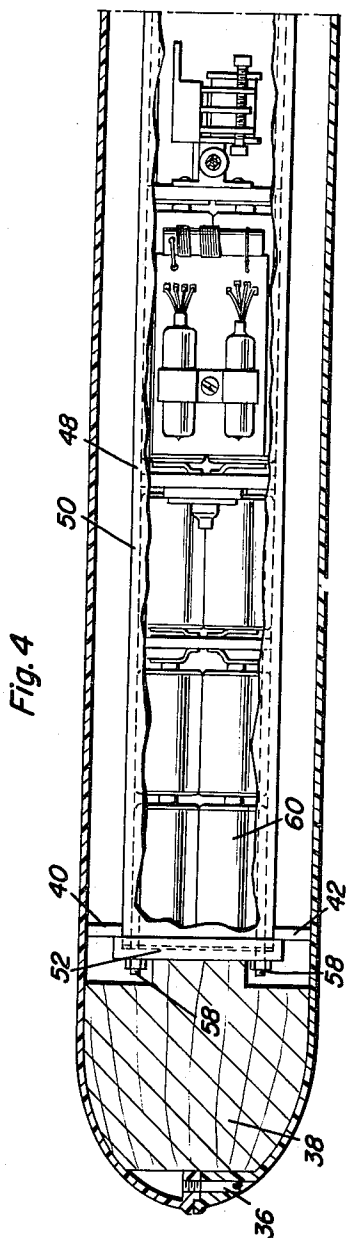
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RADIO CONTROLLED TORPEDO

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3 Sheets-Sheet 3



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2,949,089

RADIO CONTROLLED TORPEDO

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2 Claims. (Cl. 114—21)

This invention relates to the class of maritime vessels and more particularly to a novel radio controlled torpedo.

The invention herein disclosed is either adapted for use as a toy or may be utilized as a radio controlled torpedo as a weapon of war or as a life saving device.

The primary object of the present invention resides in the provision of a radio controlled torpedo which may be operated remote from the source of radio signals with the entire torpedo operating with only the antenna thereof rising above the water-line.

A further object of this invention resides in the provision of a radio controlled torpedo that employs a novel arrangement for balancing the device and which may be constructed so as to allow the outer hull to be water-proof or which may be arranged whereby the outer hull may be allowed to fill with water to maintain the torpedo completely below the water-line except for the antenna thereof.

The concept of this invention lies in the provision of a torpedo which is constructed of a hull of plastic material and which may be furnished to the individual constructor in a kit form with two separate hull sections or shells into which the electronic equipment in the form of a drive assembly may be easily installed.

The water tight plastic container for the drive assembly inside the hull section encloses the electronic equipment which is energized by an electronic radio pulse received on an outside water-proof antenna which rises a foot or so above the surface of the water while the torpedo itself runs completely submerged showing only a minor propeller wake at the stern. The hull can be easily seen under water when travelling close to observers so that the device may provide entertainment for use as a toy. Upon contact with a rounded hard bottom model boat or the like, the torpedo strikes the bottom a glancing blow and disappears under the keel of the ship "torpedoed" bending its antenna flat-wise temporarily while also temporarily losing radio contact. Then, the torpedo due to its balance will reappear on the other side ready for additional radio control pulses for control and direction back to the point of launching by the operator of the transmitter to any other locale where it may be ready for a simulated attack on another model boat or the like.

These, together with the various ancillary objects and features of the invention which will become apparent as the following description proceeds, are attained by this radio controlled torpedo, a preferred arrangement of parts being shown in the accompanying drawings, by way of example only, wherein:

Figure 1 is a perspective view of a torpedo constructed in accordance with the concepts of the present invention;

Figure 2 is a partial longitudinal sectional view of the forward portion of the torpedo;

Figure 3 is a sectional view of the after section of the torpedo on an enlarged scale showing in particular the drive means employed;

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Figure 4 is a partial horizontal sectional detail view of the torpedo showing the arrangement of parts of the forward section thereof;

Figure 5 is a horizontal sectional detail view of the after section of the torpedo;

Figure 6 is an enlarged sectional detail view as taken along the plane of line 6—6 of Figure 3;

Figure 7 is a transverse sectional detail view on an enlarged scale taken along the plane of line 7—7 of Figure 2; and

Figure 8 is a circuit diagram of certain electrical circuits employed in the invention.

With continuing reference to the accompanying drawings wherein like reference numerals designate similar parts throughout the various views, reference numeral 10 generally designates the torpedo comprising the present invention which includes a hull 12 constructed of plastic such as polystyrene or the like and which has twin propellers 14 and 16 for driving the torpedo. If desired, a single propeller may be used in place of the plural propellers 14 and 16. In addition stabilizing fins 18 and 22 as well as a steering fin 20 may be provided. The torpedo has an antenna 24 which may be constructed so as to be collapsible either collapsing and lying flat with the plane of the upper surface of the torpedo or in a groove provided therefor or it may be extensible whereby it may readily move upwardly after launching. The antenna 24 passes through an insulating grommet 26 thereby insulating the interior of the hull 12.

The hull 12 is constructed of two sections 28 and 30 which are interlocked by longitudinal interlocking flanges 32 and 34 and which are also secured together by means of fasteners 36 in the nose of the service. Accordingly, hull 12 has its sections separable to service the equipment in it. Alternatively one section may be a trap door or doors in the hull for servicing purposes. Hull 12 has a warhead 38 which in its military aspects may be an explosive and in the toy version of the device may be constructed of a substitute material for either ballast or flotation. Integrally formed with the other shell portions or sections of the hull or secured thereto by bonding are ribs 42 and 44, 46 which hold within the hull in a relative rigid manner a drive assembly 48. This drive assembly includes a water-proof housing 50 preferably constructed of plastic or the like and which includes a large number of portions or members which may be of conventional construction and individually purchased at various hobby shops making such devices generally available to the public. The housing 50 may be of any suitable configuration, it being noted that the square configuration may be employed in this form of the invention while a tubular or cylindrical shape may readily be employed. End closure plates 52 and 54 are provided for the housing 50 and are held in place by means of longitudinally extending bolts as indicated at 58, there being any suitable number of these bolts as may be desired.

Mounted within the drive assembly 48 are 45 volt "B" type radio batteries of rather light weight as indicated at 60. These are connected for powering a radio receiver 62, it being noted that other batteries 64 are provided which serve to power the rudder servo motor indicated at 68. A radio test plug 70 potentiometer, and connector socket are provided on the bulkhead 72 of the housing 50, it being noted that the top wall of the housing or any other part thereto may be sealed to the other portions for ready access to the various portions of the assembly. As indicated at 74, the antenna 24 is connected to the drive assembly and there is provided a radio plate relay 76 which functions to initiate operation of the device when a signal is received. Also mounted in the drive assembly is the propelling motor

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78 which drives a shaft 80 and is connected by means of a coupling member 82 to the shaft 84, there being a packing gland arrangement 86 for assuring that the housing remains water-proof. The shaft 84 drives a propeller 16 while also driving a gear 98 which also drives the gear 100 which in turn drives the bevel gear 102 driving shaft 104 which in turn drives the propeller 14.

Connected to the servo motor 68 is a linkage 106 which extends through a seal as at 110 after passing through an insulating grommet 112 and is connected as at 114 to the steering fin 20.

It is noted that the propellers 14 and 16 are counter rotated for stabilizing and in order to maintain proper ballast, there is provided a block 116 constructed of balsam wood or the like mounted above the gearing arrangement 98, 100 and 102 in the manner shown which balancing block may be of an adjustable size and easily substituted for one of a different size so that the entire arrangement may be easily ballasted for travel completely submerged with only a portion of the antenna 24 rising above the surface.

In operation, the drive assembly 48 will function in much the same manner as the drive assembly and radio controls disclosed in the co-pending application, Serial No. 520,670 of Donald V. Reid for Radio Control Model Submarine filed on January 8, 1955, now Patent No. 2,903,822.

While I have specified generalized radio control for my torpedo I may substitute other electronic, visual or sonar controls (or combinations thereof) for the torpedo.

The foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly all suitable modifications and equivalents may be resorted to, falling within the scope of the invention as claimed.

What is claimed as new is as follows:

1. In a vessel, a longitudinally divided hull, a plurality of transverse ribs attached to the inside of said hull, a plurality of direction control fins adjustably secured to said hull, a propeller, a propeller shaft in said hull and to which said propeller is secured, a water tight housing in said hull and containing an electric motor, said

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housing having walls, one of said walls having an aperture through which said propeller shaft extends, a seal connected at said aperture and engaging said shaft to exclude water from said housing, electrically operative means in said housing and having linkages extending through openings in said housing for actuating said control fins, a battery source of electrical potential in said housing, a radio receiver in said housing and having means for controlling the energization of said motor and said electrically operative means by said battery source, and the radio receiver having a collapsible antenna which is attached to said hull and which rises therefrom.

2. In a vessel, a longitudinally divided hull, a plurality of transverse ribs attached to the inside of said hull, a plurality of direction control fins adjustably secured to said hull, a pair of counter rotating propellers, concentric propeller shafts in said hull and to which said propellers are secured, a water tight housing in said hull and containing an electric motor, said housing having walls, one of said walls having an aperture through which said propeller shaft extends, a seal connected at said aperture and engaging the outer shaft of said concentric shafts to exclude water from said housing, electrically operative means in said housing and having linkages extending through openings in said housing for actuating said control fins, a battery source of electrical potential in said housing, a radio receiver in said housing and having means for controlling the energization of said motor and said electrically operative means by said battery source, said hull having an aperture in the top thereof, a grommet in said hull aperture, an antenna having an electrical signal transmissive connection to said radio receiver and passed through said grommet, and said antenna being collapsible to deflect when struck and temporarily lose radio contact.

References Cited in the file of this patent

UNITED STATES PATENTS

40	1,262,051	Humphrey	Apr. 9, 1918
	1,806,346	Hammond	May 19, 1931
	1,865,101	Hammond	June 28, 1932
	2,315,461	Thomas	Mar. 30, 1943
	2,396,478	Trenor	Mar. 12, 1946
45	2,404,908	Hopkins	July 30, 1946
	2,572,116	Daly	Oct. 23, 1951
	2,612,857	Jones	Oct. 7, 1952