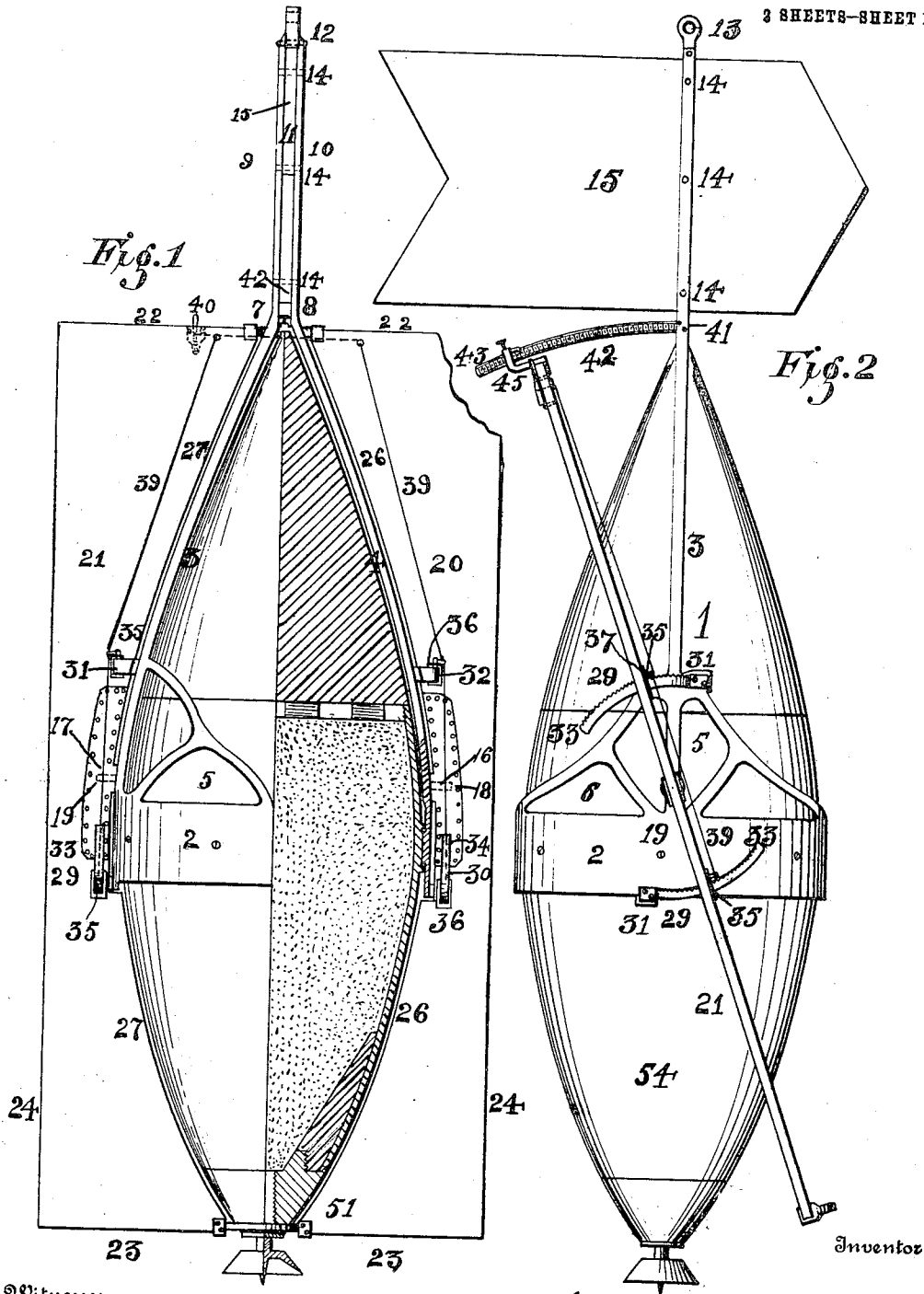


J. W. CURRELL,
DIRIGIBLE AERIAL TORPEDO.
APPLICATION FILED DEC. 2, 1908.

981,068.

Patented Jan. 10, 1911.

2 SHEETS—SHEET 1.



Witnesses
W. S. Jones
F. L. Curand

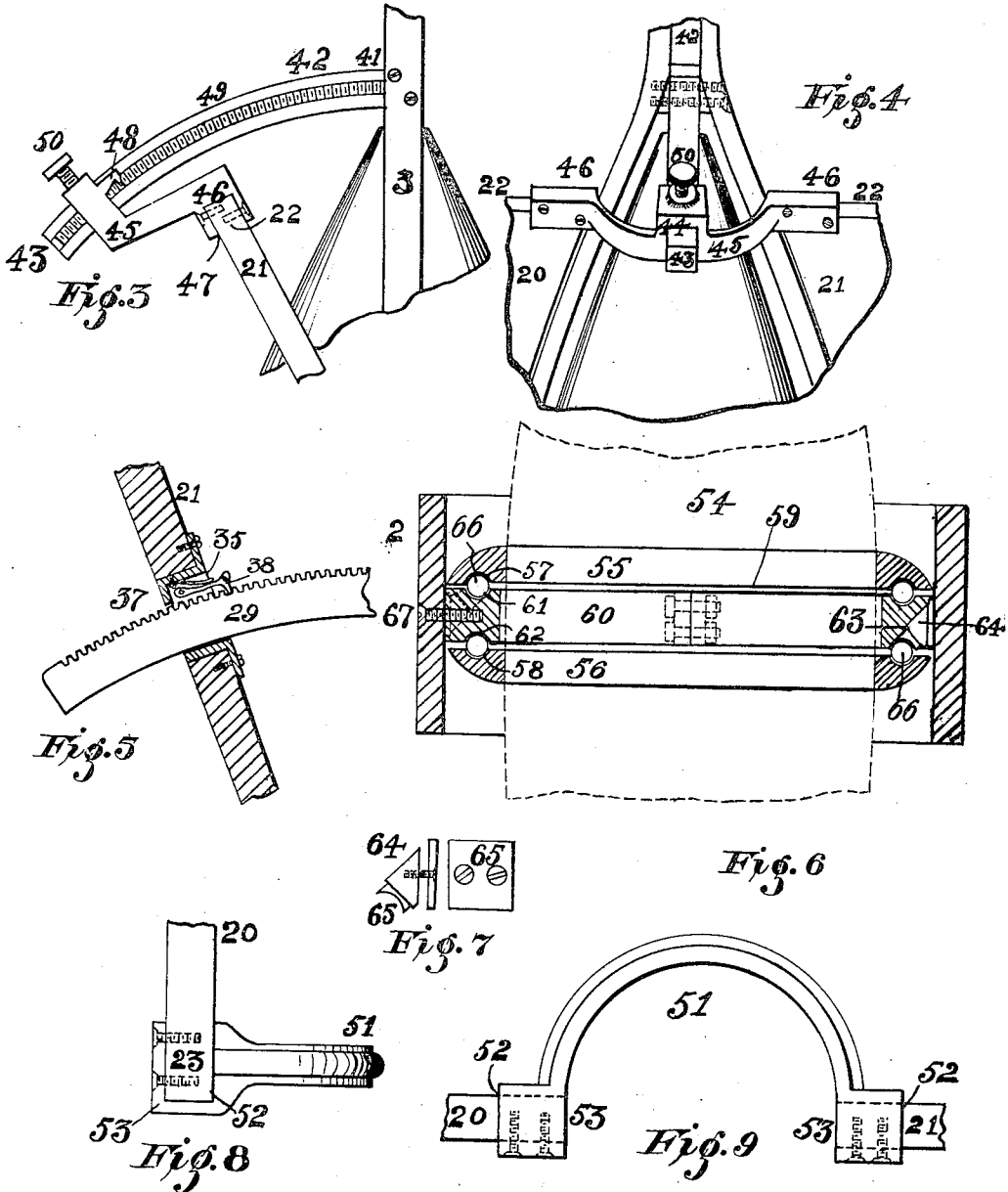
John W. Currell,
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Attorney

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UNITED STATES PATENT OFFICE

JOHN W. CURRELL, OF YOUNGSTOWN, OHIO.

DIRIGIBLE AERIAL TORPEDO.

981,068.

Specification of Letters Patent.

Patented Jan. 10, 1911.

Application filed December 2, 1908. Serial No. 465,662.

To all whom it may concern:

Be it known that I, JOHN W. CURRELL, a citizen of the United States, residing at Youngstown, in the county of Mahoning and State of Ohio, have invented certain new and useful Improvements in Dirigible Aerial Torpedoes, of which the following is a specification.

This invention relates to a dirigible aerial torpedo, and consists in the construction hereinafter pointed out.

The device produced by the present invention is especially designed to be discharged from an air-ship and for use in aerial warfare. As far as I am informed, there has not been designed any form of projectile which may be discharged from an air-ship with any fair degree of certainty that the projectile will reach a predetermined point, but all is left to chance.

With the present invention of a dirigible aerial torpedo it may be so adjusted and launched with a predetermined point in view that there will be almost absolute certainty of the torpedo reaching its destination.

In the drawings: Figure 1 is a view of the device partly in elevation and partly in section. Fig. 2 is a view of the device in elevation. Fig. 3 is an enlarged detail side view of the adjusting mechanism. Fig. 4 is a view in perspective, showing the adjusting mechanism. Fig. 5 is a detail in section and elevation of the detent or locking mechanism. Fig. 6 is a transverse section through the device at the rings. Fig. 7, views of the closure cap for the aperture where the anti-friction balls are inserted. Fig. 8, a side view of the yoke at the bottom of the rudders, and Fig. 9, a top view of such yoke.

In these drawings: the numeral 1 indicates a supporting frame having the ring or girdle 2, from which there extend in the same direction the two supporting arms 3, 4, having the braces 5, 6. These arms 3, 4 converge so as to nearly meet at the angles 7, 8, from which angles there extend the two vertical parallel top portions 9, 10, spaced apart at 11 and connected together at the top 12, in which connective top there may be a hole 13.

Secured by bolts 14 in the space 11 between the two top portions 9 and 10 is a vane 15. Extending axially from the ring or girdle 2 at the ends of a diameter are the two trunnions 16, 17, which rest in bearings 18, 19 of the two rudder blades 20, 21. These

rudder blades 20, 21 are made alike and are duplicates, the two together forming the rudder or steering device. They have the straight edged tops, bottoms and outer sides 22, 23, 24 and the inner edges 26, 27 concaved so that the two together form a space between them approximately the shape of a plane cut through a vertical diameter of the usual shaped torpedo. Struck from the trunnions 16, 17 as centers are the pairs of curved rack bars 29, 30, secured at one end 31, 32 to the supporting frame 1 and having their other ends 33, 34 free. These curved rack bars 29, 30 pass through slots 35, 36 in the rudder blades 20, 21, which slots may have casings 37. In these slots 35, 36 are located spring detents 38, which engage the rack bars 29, 30. Wires 39 extend from these detents 38 and are secured at their other ends to a lever and operative handle 40.

Adjacent to the angles 7 and 8 there is secured to the frame 1 one end 41 of a curved graduated or scale bar 42, the other end 43 being free. This bar 42 passes through a hole 44 in a curved yoke 45, which extends on opposite sides of the scale bar 42, and has its ends 46, 46 secured to the tops 22, 22 of the rudder blades 20, 21, the edges of the tops of the rudder blades fitting in notches 47, 47 of the ends 46, 46. This yoke 45 has a pointer 48 adjacent to the scale 49 on the scale bar 42 and a binding screw 50 passing down into the hole 44 and engaging the top of the scale bar 42. At their bottoms 23, 23 the two rudder blades 20, 21 are held together by a curved yoke 51, the bottom edges fitting into notches 52, 52 of the ends 53, 53 of this yoke.

Within a support or carriage such as described a torpedo is to be placed. Such torpedo may be of any approved construction and may be secured in any approved manner, it only being essential that the war head shall be in front when the torpedo is discharged. However, I have designed a means for securing the torpedo in the support and this will be explained.

In these drawings the numeral 54 represents a torpedo of the usual construction, though I have shown in outline attached to it a special form of detonator which is not claimed herein. Near the middle of this torpedo, but properly spaced apart, there are secured, by being shrunk thereon or otherwise, two rings 55, 56 having the grooves 57, 58 semicircular in cross section. There is

placed loosely around the torpedo 54 in the space 59 between the rings 55, 56 a middle ring 60 made in two parts and held together at its ends. This middle ring has in its top and bottom surfaces the grooves 61, 62 complementary to the grooves 57, 58. This middle ring 60 has on its top and bottom a passage 63 leading from the outside to the grooves 61, 62 and this passage is closed by a plug 64 having on the inside the curve 65 shaped to aline with the grooves 61, 62. This plug 64 is secured in place by a plate 65. Through the passages 63 anti-friction balls 66 are poured down between the rings 55 and 60 and 56 and 60, filling the grooves between these rings and the plugs 64 and plates 65 are put in place. The torpedo 54 with the rings 55, 60 and 56 secured thereto is inserted within the frame 1 and the ring 60 is secured by bolts or screws 67 to the ring or girdle 2.

This device is to be taken up into an air ship to be discharged therefrom at some predetermined object, such as a ship, a fort, an entrenched army, city, etc. When the air ship shall have been brought to such position as may be desired, the operator will decide from his knowledge and skill aided by proper instruments, such as an aneroid barometer, range finder, anemometer, etc., the point at which to direct the torpedo and allowance to be made for atmospheric conditions. The detents 38, 38 are drawn from the racks 29, 30 and the yoke 45 is moved on the scale bar 42 until the rudder blades 20, 21 are given the proper angle to guide the flight of the torpedo. The detents are then permitted to engage the racks 39. The entire device is then dropped from the air ship. The vane 15 will cause the torpedo to come up to the wind and fall with a steady flight and in a direct path. The pressure of the atmosphere upon the bottoms of the rudder blades, the force of gravity and any wind pressure for which allowance has been made will produce a resultant force which

will carry the torpedo to the predetermined objective point. In the flight of the torpedo the ball bearings permit the frame to turn about the torpedo easily and without twist should varying winds affect the vane.

Having described my invention, what I claim is:

1. A torpedo in combination with a supporting frame having two rudder blades, one blade on each side of the torpedo and each blade having a slot, a rack bar secured to the frame and passing through such slot, each rudder blade having a detent at such slot to engage the rack bar passing there-through.

2. A torpedo in combination with a supporting frame having two rudder blades journaled thereto, one blade on each side of the torpedo, the two rudder blades being connected together, and a graduated scale bar connected to the frame, the rudder blades being adjustably connected with such scale bar.

3. A torpedo in combination with a supporting frame having two adjustable rudder blades, one blade on each side of the torpedo, the scale bar secured thereto; the two rudder blades journaled in the frame and having the yoke secured to the tops of the rudder blades, the scale bar passing through such yoke, and the rack bars secured to the frame and passing through the rudder blades, the latter having detents engaging the rack bars.

4. The combination of a torpedo having two rings, a supporting frame having a middle ring between the two rings of the torpedo and anti-friction rollers between the rings.

In testimony whereof I affix my signature, in presence of two witnesses.

JOHN W. CURRELL.

Witnesses:

FRANCK L. OURAND,
WALTER G. JONES.