G. F. RUSSELL.

TORPEDO.

APPLICATION FILED NOV. 9, 1915.

1,209,625.

Patented Dec. 19, 1916.

Fig. 5.

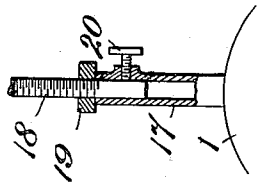


Fig. 6.

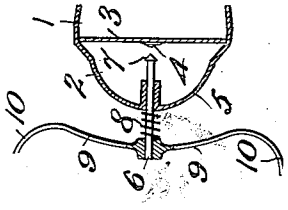


Fig. 4.

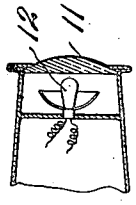


Fig. 3.

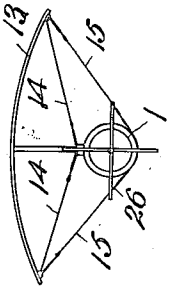


Fig. 1.

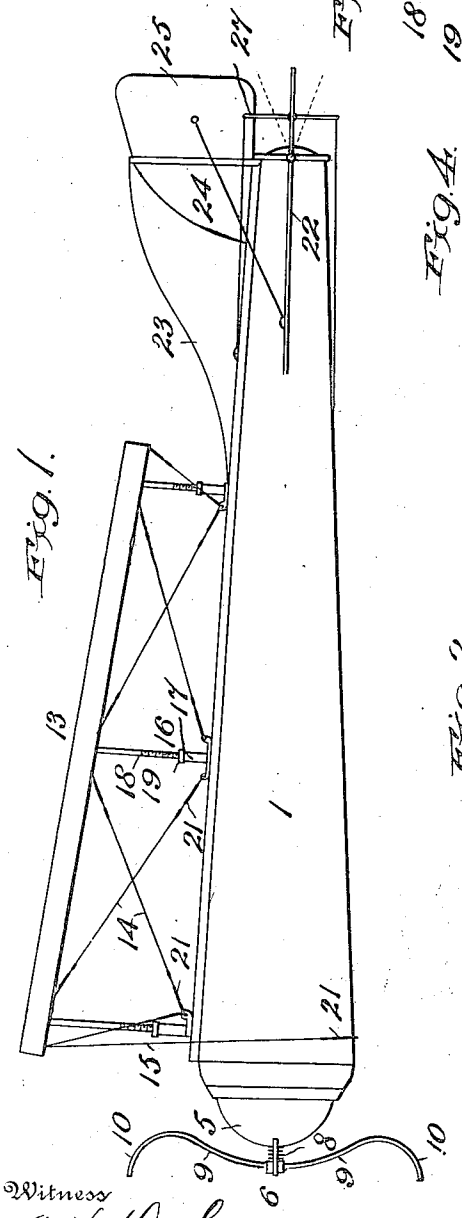
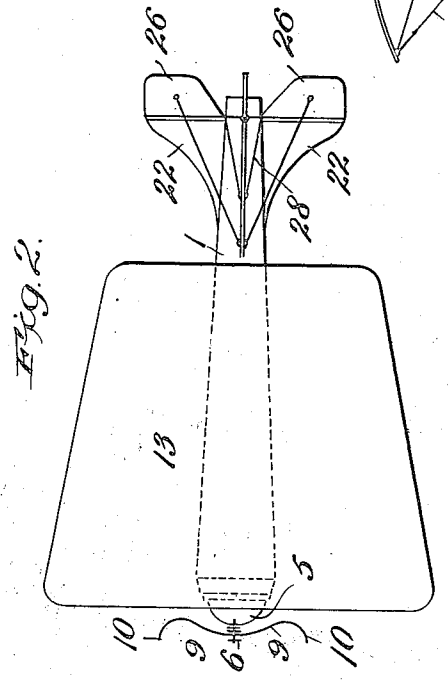


Fig. 2.



Witness

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TORPEDO.

1,209,625. Specification of Letters Patent. Patented Dec. 19, 1916.

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To all whom it may concern:

Be it known that I, GEORGE F. RUSSELL, a citizen of the United States, residing at Hoboken, in the county of Hudson and State of New Jersey, have invented new and useful Improvements in Torpedoes, of which the following is a specification.

This invention relates to projectiles and has for its principal object, the provision of a sustaining surface operating to sustain the projectile by the re-actions resulting when the surface is moved through the air or when the projectile is in flight, and it is contemplated herein to include means for changing the angle of incidence of said surface to meet common requirements and to also include means whereby the projectile may be made to take predetermined courses while in flight, including respectively ascending and descending movements thereof as well as curvilineal movements.

I further contemplate providing a projectile or aerial torpedo which may be set in operation by any suitable well known form of launching apparatus or projected and started in its flight by simply casting the same from an aeroplane or the like and one which will be provided with means whereby the structure may be accurately projected toward a sighted mark.

A still further object is to provide a shell or tube containing an explosive charge and means for sustaining the weight of the tube and for insuring stability of the tube while in flight.

Reference is to be had to the accompanying drawings, constituting a part of this specification, in which similar characters of reference denote corresponding parts in all the views, and in which:—

Figure 1 is a side view of my aerial torpedo. Fig. 2 is a top plan view thereof. Fig. 3 is an end view of the same. Fig. 4 is a section through a part of the tube. Fig. 5 is a vertical section through the means for changing the angle of the sustentation surface. Fig. 6 is a horizontal section through the tube showing the firing mechanism.

In carrying the invention into practice and in order that means may be employed for sustaining the weight of a projectile, and for causing the same to be moved through the air by atmospheric re-action on the sustaining surfaces of the structure when the latter is impelled either by force or gravity or by mechanical power, it is found commercially feasible to employ a tube 1 the same being in the present instance, of a configuration conforming with that of a torpedo commonly employed in warfare and it is preferred that the firing chamber 2 be provided with a diaphragm 3 having a concussion cap 5 which when fired will instantly operate an explosive charge within the tube.

The tube has its crown 5 provided with a sliding firing pin 6, the end 7 thereof being normally disposed in spaced relation to the cap 4 under the action of a spring 8. The forward end of the firing pin is equipped with a plurality of lateral wings or extensions 9 whose outer ends are curved in a forward direction as at 10 so as to readily come into contact with objects, such as wire entanglements, hay stacks or the like and thereby cause movement in a firing direction to be imparted to the pin 6. However, the firing device just mentioned is only one of many forms which may be associated with the structure to cause a charge to be exploded at a desired time and for this reason, I do not wish to limit myself to this precise arrangement. At the stern of the tube 1 is means for visually making known the flight of the object at night-time or at such other time as obscurities in the atmosphere may necessitate the trail of the projectile being illuminated in order that the operator may readily follow the torpedo until the mark aimed at is struck. This means consists in equipping the stern of the tube with a lens 11 having a lamp 12 associated therewith, which may receive its power from an electric source, such as a battery, not shown.

The sustaining surface 13 extends over the tube and as illustrated, said surface is transversely curved and it extends through the major length of the tube. This surface is disposed at an angle to the axis of the tube, the distance between the latter and the entering edge of the plane or surface 13 being greater than the distance between the tube and the trailing edge of said plane. Suitable cross guys 14 connect the sides of the surface 13 with the tube, while other guys 15 are shown to connect the tube with said surface. Struts 16 connect the surface 13 centrally with the tube and these struts are designed so as to permit the angle of incidence of the surface to be changed at the will of the operator and according to such

calculations as may be employed for the purpose of establishing equilibrium. For this purpose the struts consist of permanent socket bases 17 and threaded adjustable sections 18. Nuts 19 upon such threaded sections may be brought to bear against the ends of the tubular sections 17 as shown in Fig. 5. These nuts may therefor be adjusted so as to cause the screw sections to move in a vertical direction. Set screws 20 upon the sections 17 are adapted to be brought in impinging contact with the sections 18 to securely hold the same in their adjusted position. To compensate for the mentioned adjustment of the surface 13 the guys 14 and 15 are provided with suitable turn buckles 21 as conventionally illustrated herein.

At the aft end of the tube are fixed depressing and elevating surfaces 22—22. Disposed at right angles to the surfaces 22—22 is a balancing surface 23, the latter being detachable from a permanent surface 24 and it may be reversed or mounted upon the underside of the tube if desired. To the permanent surface 24 is attached a rudder 25. Movably connected to the surfaces 22—22 are movable sections 26 having controlling means 27 adapted to be operated whereby to cause the object to ascend or descend at the wish of the operator. The object may be made to take a curved course by setting the rudder 25 through the controlling means 28.

It follows from the construction described that the torpedo or projectile may be propelled by mechanical power or by force of gravity and when launched it may be most accurately conveyed to a predetermined target or mark.

What is claimed as new is:—

1. An aerial torpedo comprising a body, a sustaining plane pitched at an inclined angle with relation to the axis of the body, uprights connecting said sustaining plane with the body, and means arranged in the length of and forming part of said uprights for varying the effective length of said uprights, whereby to bodily adjust the plane to vary the distance between the same and the body without changing the pitch of said plane, or to both vary the distance and inclination of the plane with respect to the axis of the body.

2. An aerial torpedo comprising a body, a sustaining plane located over the forward portion thereof and pitched at an inclined angle with relation to the axis of the body, rigid and vertically movable horizontal planes at the rear end of the body and disposed substantially in line with the horizontal longitudinal center of the body, and vertically disposed fixed and movable vanes upon the rear portion of the body disposed substantially above the horizontal plane of the body and extending vertically to a point substantially in horizontal alinement with the trailing portion of the inclined sustaining plane.

3. An aerial torpedo comprising a body, a sustaining plane located over the forward portion thereof and pitched at an inclined angle with relation to the axis of the body, socket members upon the upper surface of the body, threaded rods slidably engaging said socket members and adjustably supporting the sustaining plane, adjusting nuts engaging the threaded rods, and clamping members upon the sockets and engaging said rods.

4. An aerial torpedo comprising a body having its stern portion formed to provide a light chamber having a light transmitting lens, and illuminating means inclosed within said light chamber.

5. An aerial torpedo comprising a longitudinally tapered body having its reduced stern portion provided with a partition forming an illuminating chamber, a lens closing the outer side of said illuminating chamber, and an illuminating device disposed within said chamber and supported by said partition.

6. An aerial torpedo comprising a body, horizontal fins upon the sides of the stern end of the body, horizontal rudders hinged or pivoted to said fins and having their adjacent edges spaced apart, the body being provided with an illuminating chamber extending into said space between the horizontal rudders, and illuminating means within said chamber.

7. An aerial torpedo comprising a body having its nose portion provided with a firing chamber, provided with a charge igniter therein, a firing pin for setting off said igniter, said pin being movably mounted in the body and extending outwardly therethrough, means for normally holding the pin retracted, and radially arranged compoundly curved flukes or arms carried by the outer end of the pin and extending outwardly beyond the sides of the nose portion.

8. A torpedo comprising a body having a nose portion provided with a firing chamber, said chamber having an igniting device therein, a slidably mounted firing pin arranged for engagement with said igniting device and projecting outwardly from said chamber, means for normally holding said firing pin retracted, and a plurality of radially arranged serpentine-shaped flukes or arms mounted upon the outer end of the firing pin and extending beyond the sides of the nose portion.

9. An aerial torpedo comprising a torpedo-shaped body, a sustaining plane extending the greater part of the length of the body from a point in proximity to the nose portion to a point between the transverse center and stern end of said body, said sustaining plane being of greatest width

or spread at its leading edge and thence gradually tapering rearwardly to a reduced width at its trailing edge and being concavo-convexly curved between its lateral edges and having its concaved surface facing downwardly, and connecting means between said sustaining plane and the torpedo shaped body.

10. An aerial torpedo comprising a body, a sustaining plane pitched at an inclined angle with relation to the axis of the body, sectional connecting elements between the sustaining plane and body, each consisting of rigid sections upon the body, for rigidly fixing the plane with relation to the body, said sections being adjustably connected so that the distance of the plane from the body may be varied without varying the pitch of the plane or the plane adjusted to vary its distance from the body and also its inclination with relation to the axis of the body, and means for maintaining the sections of the respective sectional connecting elements rigidly in alinement with each other.

11. An aerial torpedo comprising a torpedo-shaped body, a sustaining plane extending along the greater portion of the length of the body from the nose portion rearwardly, leaving a relatively short portion of the body extending in the form of a tail beyond the trailing edge of the plane, said plane being pitched at an inclined angle with relation to the axis of the body, rigid connections between the plane and body, rigid and vertically movable horizontal planes at the rear end of the body and disposed substantially in line with the horizontal longitudinal center of the body, and vertically disposed fixed and movable vanes upon the tail portion of the body, said fixed vanes extending vertically to a point substantially in vertical alinement with the trailing portion of the inclined sustaining plane.

12. An aerial torpedo including a body, a sustaining plane mounted upon the body, adjustable connections for maintaining the plane at an inclined angle with relation to the axis of the body, said connections consisting of uprights each composed of relatively adjustable sections, adjustable solely in the direction of their length, whereby the plane may be adjusted bodily to vary its position with relation to the body without varying its pitch or angle of incidence.

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

GEORGE F. RUSSELL.

Witnesses:
JAMES A. KOEHL,
ANNA V. DOYLE.