

1,038,400.

Patented Sept. 10, 1912.

2 SHEETS—SHEET 1.

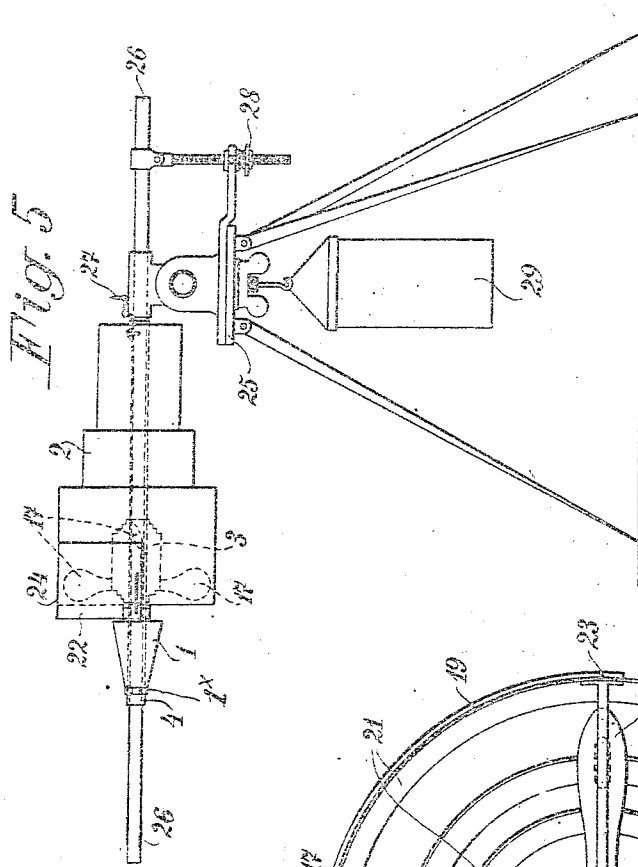
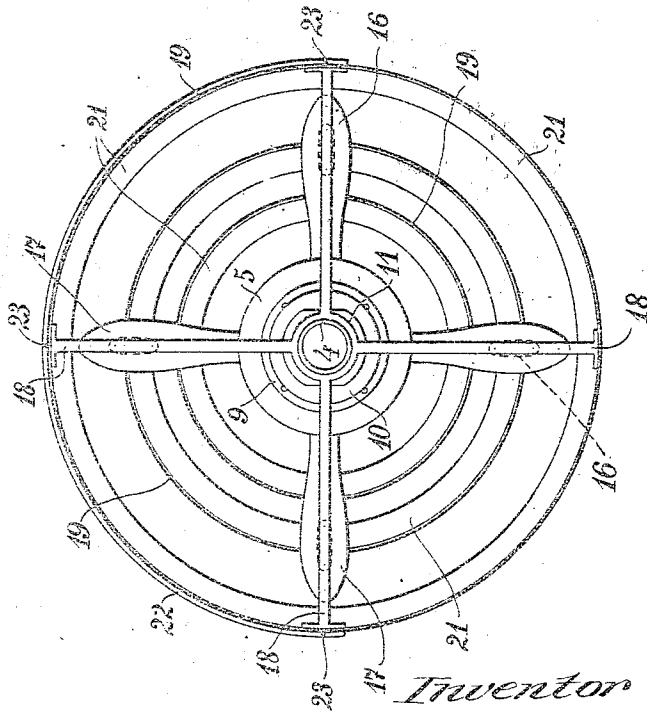


Fig. 5

Fig. 1



Witnesses:

[Signature]
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Inventor
Johann A. Linsmeyer

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[Signature]

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2 SHEETS—SHEET 2.

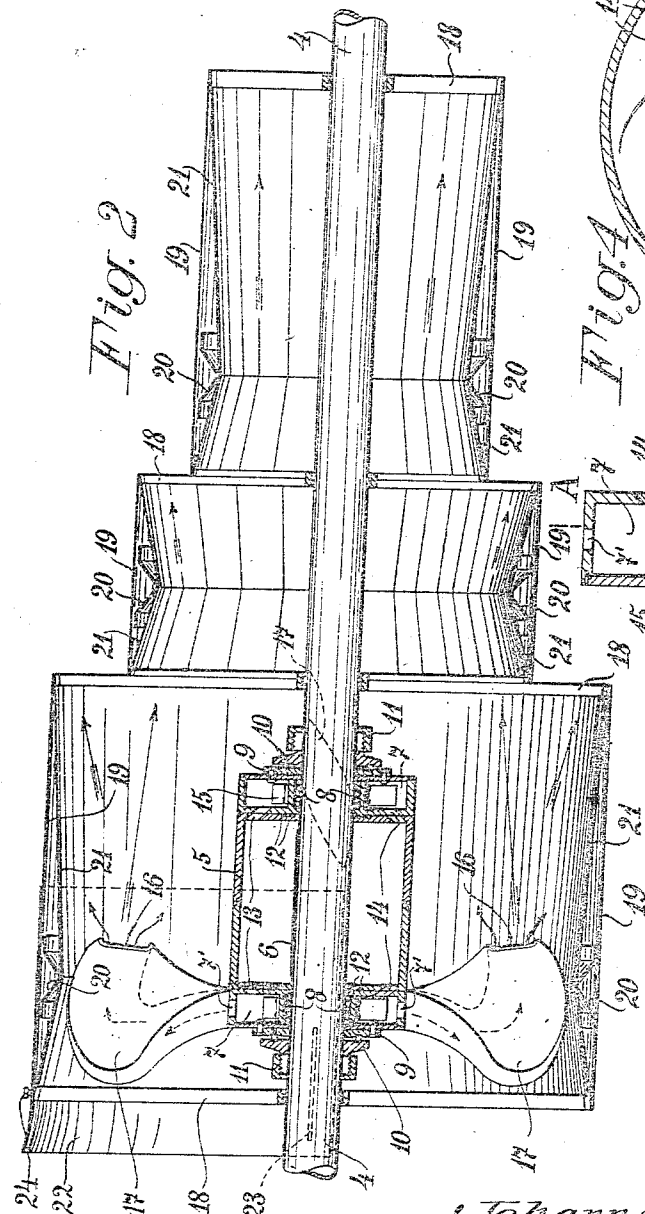


Fig. 2

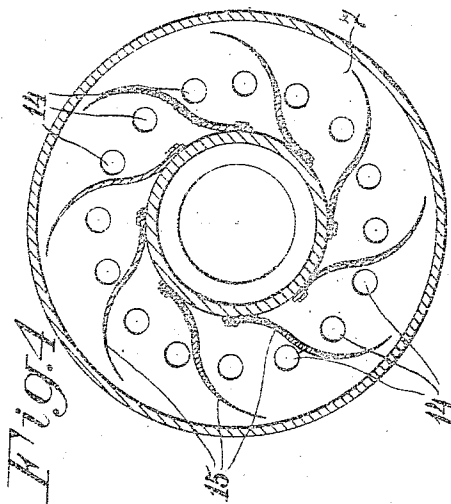


Fig. 4

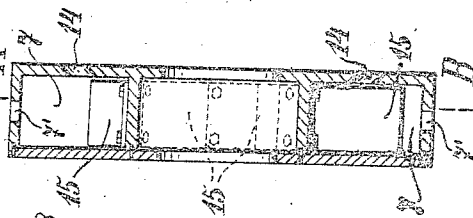


Fig. 3

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UNITED STATES PATENT OFFICE.

JOHANN ALEXANDER LINSMEYER, OF VIENNA, AUSTRIA-HUNGARY.

AERIAL TORPEDO.

1,038,400.

Specification of Letters Patent. Patented Sept. 10, 1912.

Application filed October 6, 1910. Serial No. 535,709.

To all whom it may concern:

Be it known that I, JOHANN ALEXANDER LINSMEYER, a subject of the Emperor of Austria-Hungary, residing at Vienna, Austria-Hungary, have invented certain new and useful Improvements in Aerial Torpedoes, of which the following is a specification.

The object of the present invention is a self-propelled aerial torpedo which is distinguished from similar devices now in use, both in the form of dirigible balloons and of rocket torpedoes, by the fact that an explosive body provided with a percussion cap is fixed, together with a flying device and the motor thereof, upon a central shaft which is mounted upon an adjustable aiming device for the purpose of conveying the torpedo to the target without the use of external driving mechanism.

An embodiment of the invention is illustrated in the accompanying drawings, whereof:

Figure 1 is a front elevation of the flying device; Fig. 2 is a longitudinal vertical section thereof; Fig. 3 is an enlarged detail section of the motor; Fig. 4 is a section on the line A—B of Fig. 3; and Fig. 5 is a side elevation of the complete torpedo and aiming device on a reduced scale.

The improved torpedo, (Fig. 5), consists of an explosive body 1, which is fixed, together with a flying device or flier 2 and its motor 3, on a central tubular shaft 4. The explosive body 1 has substantially the shape of a truncated cone, is axially bored, and carries upon its front end an annular percussion cap 1* of any suitable type, such, for example, as is commonly used in artillery projectiles and water torpedoes. This cap, on striking a hard body, explodes and fires the aforesaid explosive body 1, as will be understood.

In the construction shown in Fig. 2, the motor 3 consists of a drum 5, that is fastened by a key 6 to shaft 4, to prevent it from rotating thereon, a hollow turbine wheel 7 arranged against each end of said drum, and a pair of propeller blades 17 carried by each wheel. Drum 5 is adapted to be filled with a slowly-burning powder and is formed upon the outer face of each of its end walls with tortuous paths 12, to shut it off from the wheels 7, which latter are mounted to rotate on ball bearings 8 on shaft 4 and are held against axial displacement by ball bear-

ings 9 that are fixed to said shaft by suitable slotted collars 10 and locking nuts 11. The end walls of the drum are also formed with outlet openings 13 which register with inlet openings 14 in the inner side walls of the turbine wheels. Within each of said wheels, on the circumferential wall thereof, are arranged flexible vanes 15, and in the wall in question there is formed a pair of openings 7' which communicate with the interiors of the propeller blades 17, these blades being hollow and being provided with rearwardly-extending lateral nozzles 16. The blades and openings of each wheel are arranged at 90° to those of the other wheel, the blades constituting constructions of their respective wheels.

When the slowly-burning powder with which the drum 5 is charged is ignited, the gases of combustion will pass through the registering openings 13 and 14 into the turbine wheels 7, where they will impinge against the vanes 15. From said wheels the gases will pass through the outlet openings 7' into the hollow propeller blades 17 and thence through the outlet nozzles 16. On this account, and by reason of the energy of flow of the gases in the direction of the arrows in Fig. 2, the turbine wheels and the propeller blades connected thereto will be caused to rotate upon shaft 4, the latter and the drum, however, remaining stationary. The action of the gases on the vanes 15 is enhanced by the escape of the gases through the nozzles 16 in blades 17, which blades act as an air propeller and exert, *per se*, a reaction effect. Instead of powder, any other suitable gas-generating agent, or, even, a gas under pressure, such as compressed air, may be used as a charge for the drum, in which case the pressure-reducing valves necessary to obtain the required impinging pressure are arranged in the drum. Accordingly, the term "gaseous charge" will be employed in this connection, since that term will cover not only the gases evolved by the ignition of the explosive charge, but also those produced by the gas-generating agent, as well as the compressed air.

Four spiders 18 are arranged on the tubular shaft 4 as supports for the tubular outer sustaining surfaces 19 of the flying device, which surfaces are made of thick fireproof webbing or thin metal sheets and in the example shown form three compartments of rearwardly stepwise decreasing diameter.

Within each compartment a metal ring 20 of V cross section is arranged, the middle edge of which is directed inward and serves in conjunction with the spiders 18 as a support for the inner supporting surfaces 21 which are made of the same material as the sustaining surfaces 19. Owing to this arrangement each compartment has a double conical internal surface with the narrower ends abutting against each other, the forward cone in the construction illustrated being steeper, while the rearward cone has a correspondingly small angle. In this manner, owing to the equal pressure of the air and the escaping gases on the front cone surfaces and the pressure of the layers of air between the abutting edges of the two cone surfaces, a straight flight without deviations and a favorable driving forward of the whole torpedo and flying device are obtained, while the step-wise rearward diminution of the sustaining compartments makes possible the full use of the carrying power of the air and gas flowing therethrough. On the upper side of the foremost compartment a surface 22 which is preferably constructed of elastic material is fixed by means of screws 24 passed through longitudinal slots 23 in said surface, in such a manner that it projects more or less beyond the front edge of said compartment. This surface 22 will be bent more or less upward during flight as it meets the air and thus determines the trajectory.

For launching, the torpedo together with the tubular shaft 4 is placed on a tube or bar 26 arranged on a stand 25 and caught by a trigger or catch 27. The desired elevation can be given to the tube by means of wheel 28 according to which the above mentioned elastic surface 22 is also adjusted. To render the aiming device stable a weight 29 may be suspended from the stand. When the torpedo has been aimed the charge in the drum 5 is ignited; the gases evolved set the turbine wheels 7 together with the propeller blades 17 rotating and on attaining the necessary speed of rotation the pull exerted overcomes the pull of the trigger 27 and the torpedo is free to perform its flight.

I claim—

1. An aerial torpedo consisting, in combination, of a tubular shaft extending the entire length of the torpedo and adapted to be loosely fitted on an adjustable aiming bar; and an explosive body and a motor mounted on said shaft, said body being provided with a percussion cap.
2. An aerial torpedo consisting, in combination, of a shaft; an explosive body fixed thereon and provided with a percussion cap; and a motor mounted on said shaft and comprising a drum adapted to contain a gaseous charge, a turbine wheel located at each end of said drum and communicating with the

same and a series of hollow propeller blades connected with said wheels and having their interiors in communication therewith for actuation by said charge.

3. An aerial torpedo consisting in combination, of a shaft; an explosive body fixed thereon and provided with a percussion cap; and a motor mounted on said shaft and comprising a drum adapted to contain a gaseous charge, a turbine wheel located at each end of said drum and communicating with the same and a series of hollow propeller blades connected with said wheels and having their interiors in communication therewith for actuation by said charge, the outer ends of said blades being provided with rearwardly directed outlet nozzles.

4. An aerial torpedo consisting, in combination, of a shaft; an explosive body fixed thereon and provided with a percussion cap; and a motor mounted on said shaft and comprising a drum adapted to contain a gaseous charge, the end walls of said drum having outlet openings for the charge formed therethrough, a hollow turbine wall arranged against each of said end walls and provided with inlet openings for said charge registering with the adjacent first-named openings, a series of vanes disposed within each wall, and a series of hollow propeller blades secured to the outer peripheral wall of each wall, and having their interiors in communication with the latter.

5. An aerial torpedo consisting, in combination, of a shaft; a series of juxtaposed open-ended tubular sustaining compartments mounted co-axially on said shaft, said compartments decreasing stepwise in diameter; a motor mounted on said shaft within the foremost compartment; and an explosive body fixed on said shaft in advance of said foremost compartment and provided with a percussion cap.

6. An aerial projectile consisting, in combination, of a shaft; a series of juxtaposed open-ended tubular sustaining compartments mounted co-axially on said shaft, said compartments decreasing stepwise in diameter; and a motor mounted on said shaft within the foremost compartment, said motor comprising a drum adapted to contain a gaseous charge, a turbine wheel located at each end of said drum and communicating with the same and a series of hollow propeller blades connected with said wheels and having their interiors in communication therewith for actuation by said charge.

7. An aerial projectile consisting, in combination, of a shaft; a series of juxtaposed open-ended tubular sustaining compartments mounted co-axially on said shaft, said compartments decreasing stepwise in diameter; and a motor mounted on said shaft within the foremost compartment, said motor comprising a drum adapted to contain a

gaseous charge, a turbine wheel located at each end of said drum and communicating with the same and a series of hollow propeller blades connected with said drum and having their interiors in communication therewith for actuation by said charge, the outer ends of said blades being provided with rearwardly directed outlet nozzles.

8. An aerial projectile consisting, in combination, of a shaft; a series of juxtaposed open-ended tubular sustaining compartments mounted co-axially on said shaft, said compartments decreasing stepwise in diameter; and a motor mounted on said shaft within the foremost compartment, said motor comprising a drum adapted to contain a gaseous charge, the end walls of said drum having outlet openings for the charge formed therethrough, a hollow turbine wall arranged against each of said end walls and provided with inlet openings for said charge registering with the adjacent first-named openings, a series of vanes disposed within each wall, and a series of hollow propeller blades secured to the outer peripheral wall of each wall, and having their interiors in communication with the latter.

9. An aerial projectile consisting, in combination, of a shaft; a series of juxtaposed open-ended tubular sustaining compartments mounted co-axially on said shaft, said compartments decreasing stepwise in diameter; a motor mounted on said shaft within the foremost compartment; and a steering device connected to the front edge of the said foremost compartment.

10. An aerial projectile consisting, in

combination, of a shaft; a series of juxtaposed open-ended tubular sustaining compartments mounted co-axially on said shaft, said compartments decreasing stepwise in diameter; a motor mounted on said shaft within the foremost compartment; and an arcuate elastic steering device connected to the front edge of said foremost compartment and adapted to be bent upwardly by the air pressure therebeneath during the flight of the projectile to maintain a flat trajectory.

11. An aerial projectile consisting, in combination, of a shaft; a series of juxtaposed open-ended tubular sustaining compartments mounted co-axially on said shaft, said compartments decreasing stepwise in diameter; a motor mounted on said shaft within the foremost compartment; and a conical annular supporting member disposed within each compartment.

12. An aerial projectile consisting, in combination, of a shaft; a series of juxtaposed open-ended tubular sustaining compartments mounted co-axially on said shaft, said compartments decreasing stepwise in diameter; a motor mounted on said shaft within the foremost compartment; and a conical annular supporting member disposed within each compartment, said members having a successively decreasing pitch.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JOHANN ALEXANDER LINSMEYER.

Witnesses:

JOSEF RUBURCH,
AUGUST FUGGER