G. C. OFFEN.

AEROPLANE.

APPLICATION FILED AUG. 21, 1920. RENEWED APR. 28, 1921.

1,382,535.

Patented June 21, 1921.

2 SHEETS—SHEET 1.

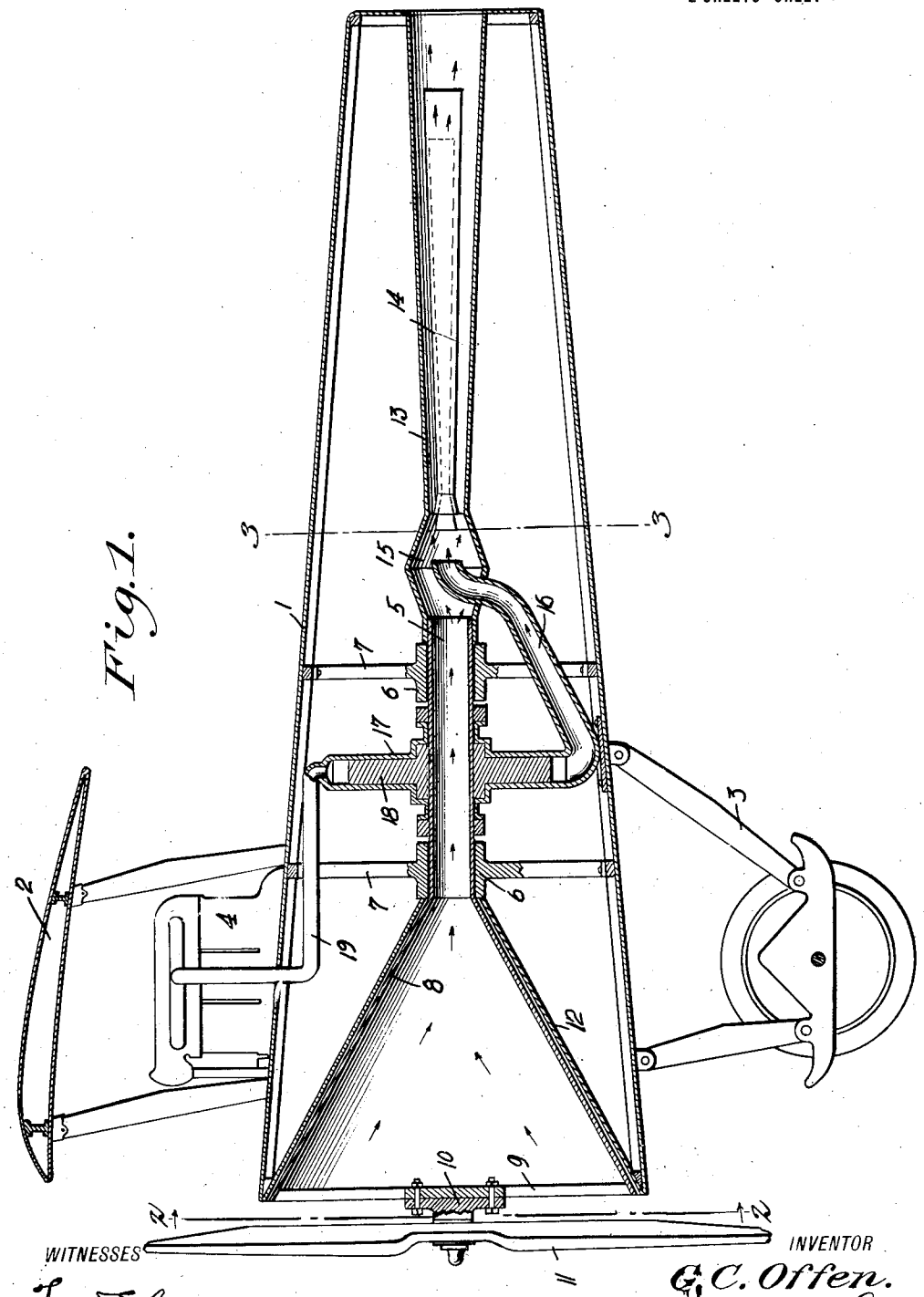


Fig. 1.

WITNESSES

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2 SHEETS—SHEET 2.

Fig. 2.

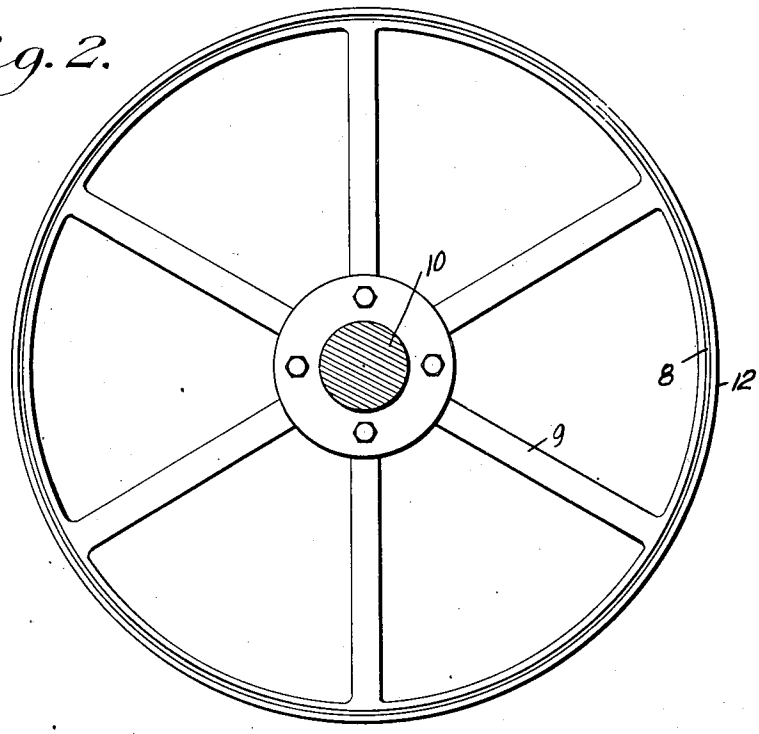
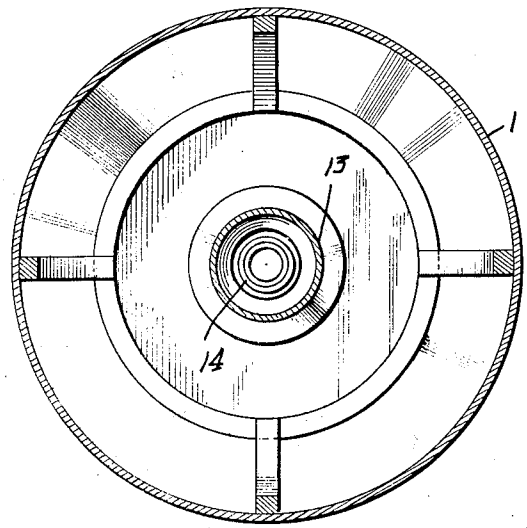


Fig. 3.



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UNITED STATES PATENT OFFICE.

GEORGE CYRUS OFFEN, OF MOOSE JAW, SASKATCHEWAN, CANADA.

AEROPLANE.

1,382,535. Specification of Letters Patent. Patented June 21, 1921.

Application filed August 21, 1920, Serial No. 405,146. Renewed April 28, 1921. Serial No. 465,244.

To all whom it may concern:

Be it known that I, GEORGE C. OFFEN, a citizen of Canada, and a resident of Moose Jaw, Province of Saskatchewan, and Dominion of Canada, have invented a new and Improved Aeroplane, of which the following is a full, clear, and exact description.

This invention relates to improvements in aeroplanes, and more particularly to airships of any type, an object of the invention being to provide improved means for propelling or facilitating the propulsion of the plane.

A further object is to provide improved means for utilizing the movement of the air to induce a suction or partial vacuum, and utilize said suction or partial vacuum to assist or transmit motion to the propelling means.

A still further object is to provide an airship having an improved arrangement of propeller operating means in which the air current passing rearwardly is utilized to transmit motion to the propeller of the machine.

With these and other objects in view, the invention consists in certain novel features of construction and combinations and arrangements of parts as will be more fully hereinafter described and pointed out in the claims.

In the accompanying drawings:

Figure 1 is a view in longitudinal section illustrating my improvements applied to an ordinary type of aeroplane.

Fig. 2 is an enlarged view in transverse section on the line 2—2 of Fig. 1.

Fig. 3 is a similar view on the line 3—3 of Fig. 1.

1 represents the body of the aeroplane which may be constructed in any approved manner and which is supported by wings or planes 2, and provided with any improved form of landing device 3. 4 represents a motor which may constitute an internal combustion engine, a gas generator, or a steam boiler, or in fact the motor 4 may constitute any form of generator which generates a gas or motor fluid of any kind and I do not wish to be limited to any particular type of motor or generator employed.

In the body 1, a tubular shaft 5 is longitudinally positioned, and has rotary mounting in bearings 6 connected by spiders or frames 7 with the body 1. This tubular shaft 5 has a conical or bell mouth inlet end 8 with a spider 9 at its forward end, to which the hub 10 of a propeller 11 is secured. This bell mouth inlet end 8 of the tubular shaft 5 may turn in a conical casing 12 if desired, which provides a strengthening means for the bell mouth and obviates lateral displacement.

An exhaust pipe 13 is located at the rear end of the body 1, and is of general tapering form throughout the greater portion of its length, and is provided interiorly and centrally with an expansion nozzzle 14 which is tapered in conformity with the exhaust pipe 13. At the point of juncture between the exhaust pipe 13 and the tubular shaft 5 the said exhaust pipe is made with an annularly expanded chamber 15 receiving the outlet end of an exhaust pipe 16, the latter discharging rearwardly and into the expansion nozzle 14.

A turbine or other form of rotary motor 17 is positioned around the tubular shaft 5, and the rotor 18 of the turbine is fixed to the shaft 5. An inlet or supply pipe 19 connects the generator or motor 4 with the turbine 17 and the exhaust pipe 16 above referred to connects the outlet of said turbine with the exhaust pipe 13. I have not attempted to illustrate the particular form of turbine or rotary motor employed as it is obvious that I may employ any structure which will perform the functions intended.

The operation is as follows: The motive fluid from the motor or generator 4 passes through the pipe 19 and operates to turn the rotor 18 and thus impart rotary motion to the tubular shaft 5 and turn the propeller 11. The exhaust from the turbine 17 escapes through the pipe 16 and through the expansion nozzle 14. As the airship or aeroplane moves through the air, the current of air will pass into the bell mouth 8 through the tubular shaft 5 into the exhaust pipe 13, and induce a suction or partial vacuum through the expansion nozzzle 14 and exhaust pipe 16, thereby causing a turning movement, or in any event augmenting the turning movement of the rotor 18 of the turbine 17.

It will thus be seen that I utilize the movement of the air through the bell mouth 8 and tubular shaft 5 to impart motion to the airship, and by providing a relatively wide flaring bell mouth, a sufficient pressure of air can be utilized to give material results.

It is possible that in some cases the motion of the air or partial vacuum created thereby will be sufficient to turn the turbine rotor, but in any event such movement of air will be utilized to augment the generator, and furthermore will have a tendency to steady and maintain horizontal, the body of the plane in flight.

While I have illustrated what I believe to be a preferred embodiment of my invention, I would have it understood that I do not limit myself to the precise details set forth, but consider myself at liberty to make such changes and alterations as fairly fall within the spirit and scope of the appended claims.

What I claim is:

1. The combination with an airship, of a tubular shaft extending entirely therethrough, a propeller fixed to the inlet end of the shaft, and a fluid motor for revolving the shaft.

2. The combination with an airship, of a tubular shaft extending entirely therethrough, a propeller fixed to the inlet end of the shaft, a fluid motor for revolving the shaft, and means for utilizing the movement of the air through the shaft to create a partial vacuum assisting the motor exhaust.

3. The combination with an airship, of a tubular shaft, a bell mouth at the inlet end of said shaft, a propeller secured to said bell mouth, an exhaust pipe communicating with the rear end of the tubular shaft, a fluid motor on the tubular shaft, and an exhaust pipe connecting the outlet of the fluid motor with the first mentioned exhaust pipe.

4. The combination with an airship, of a tubular shaft, a bell mouth at the inlet end of said shaft, a propeller secured to said bell mouth, an exhaust pipe communicating with the rear end of the tubular shaft, a fluid motor on the tubular shaft, an expansion nozzle in the exhaust pipe, and an exhaust pipe connecting the outlet of the fluid motor with the first mentioned exhaust pipe and discharging into said expansion nozzle.

5. The combination with an airship, of a tubular shaft, a bell mouth at the inlet end of said shaft, a propeller secured to said bell mouth, an exhaust pipe communicating with the rear end of the tubular shaft, a fluid motor on the tubular shaft, a motor or generator, a fluid directing pipe connecting the generator with the fluid motor, and an exhaust pipe connecting the fluid motor with the first mentioned exhaust pipe whereby the movement of air through the shaft and exhaust pipe operates to create a suction through the fluid motor and utilize the power thereby created.

6. The combination with an airship, of a tubular shaft extending entirely therethrough, a propeller fixed to the inlet end of the shaft, a fluid motor for revolving the shaft, and means utilizing the movement of air through the airship to induce a suction upon the exhaust of said motor.

GEORGE CYRUS OFFEN.