

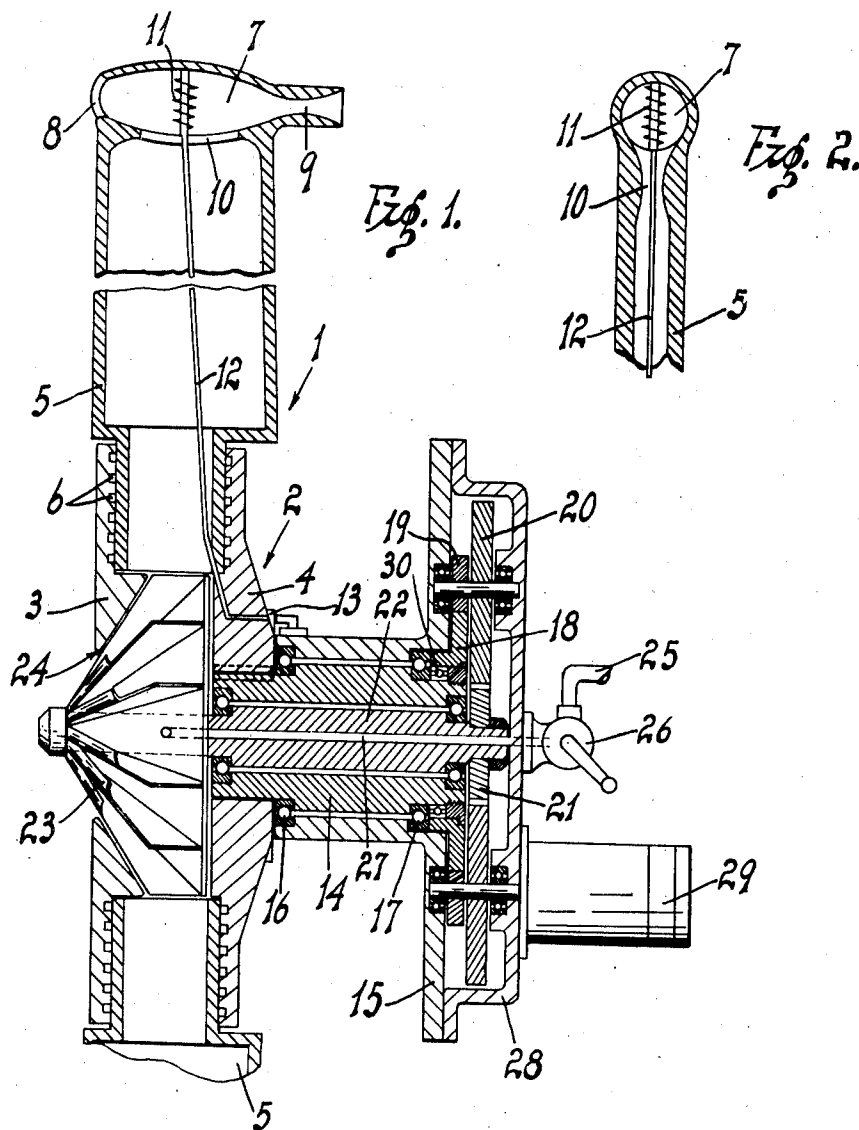
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JET PROPELLER ENGINE

2,465,856

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2 Sheets-Sheet 1



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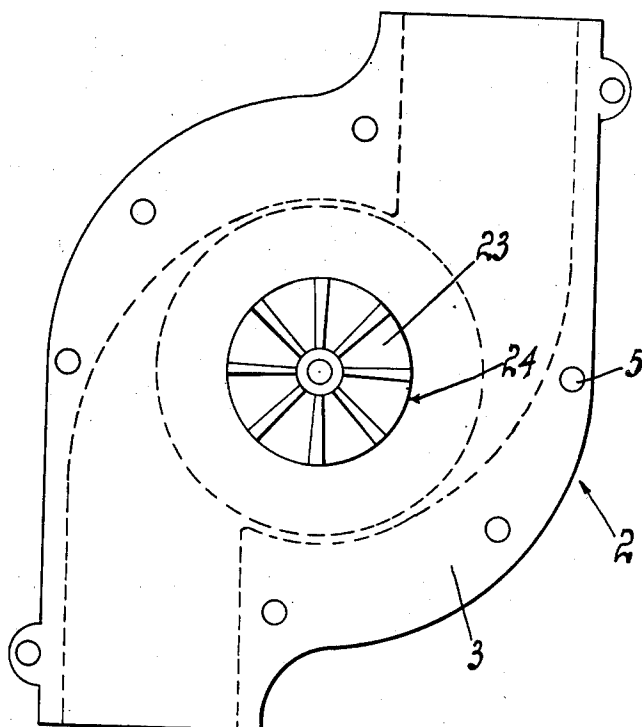


Fig. 3.

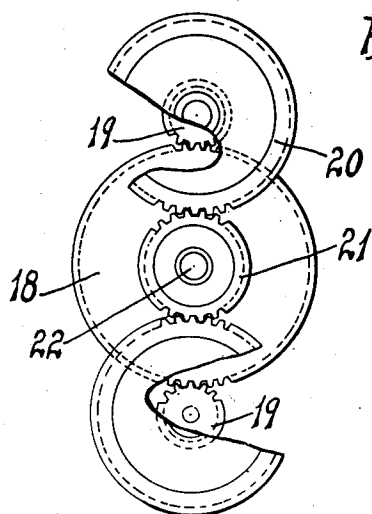


Fig. 4.

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JET PROPELLER ENGINE

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1 Claim. (Cl. 170—135.4)

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This invention relates to a jet propeller engine wherein the fuel is fed into the blades of the propeller, is there compressed by centrifugal force, and moved into an explosion chamber where the gases are ignited and exhaust in the trailing edge of the blades.

An object of my invention is to provide a novel jet propeller engine which is light in weight, is compact and is relatively simple in construction.

Another object of my invention is to provide a novel jet propeller engine wherein the power of the burning gases is exerted at or approximately at the tip of the blades, thus providing a long torque arm and giving the maximum amount of power possible.

Another object of my invention is to provide a novel engine of the character stated wherein the incoming fuel is first compressed in a supercharger unit, is then further compressed by centrifugal force within the blades, and is then moved into a burning chamber at the tip of the blade, this chamber being open at the forward or leading edge to provide a blast to assist in scavenging the burner chamber.

A feature of my invention resides in the adaptability of my engine construction to both a fixed pitch propeller or a variable pitch propeller.

Another feature of my invention is to provide a novel means of driving the supercharger, this means being simple and compact.

Other objects, advantages and features of invention may appear from the accompanying drawing, the subjoined detailed description and the appended claim.

In the drawing:

Figure 1 is a fragmentary longitudinal sectional view of my engine, and in which the section line is offset at the center of the propeller to bisect both of the offset blades and sockets.

Figure 2 is a fragmentary transverse sectional view of one of the blades.

Figure 3 is a front elevation of the hub section.

Figure 4 is a rear elevation with parts broken away of the gear train.

Referring more particularly to the drawing, my jet propeller engine 1 consists of a hub 2 which is formed in two parts 3 and 4. The hub halves 3 and 4 are bolted together by means of a plurality of bolts 5, all of which is usual and well known in propeller construction. A plurality of blades 5 extend radially from the hub 2, and these blades are hollow from the base to the tip so as to act as a conduit for the fuel as will be subsequently described. The blades 5 are held in the hub 2 by means of the ring 6, all of which is usual and well known in the art.

It is evident that the blades 5 may be either fixed in pitch or a variable pitch construction may be employed, if desired. At the outer end of each of the blades 5, I provide a burner cham-

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ber 7 which fairs into the blade 5 and is so designed that little or no resistance or air interference is encountered because of this chamber. The chamber is opened at the leading edge as shown at 8 and at the rear of the trailing edge of the blade a Venturi port 9 is provided. The purpose of the opening 8, is to introduce blast air from the forward motion of the plane, and rotation of the propeller; into the chamber 7, which increases the compression of the gases in chamber 7, above the pressures generated by the supercharger.

A second intake Venturi port 10 is provided between the hollow blade 5 and the chamber 7. The purpose of this Venturi intake port is to further increase the pressures of the fuel as the fuel passes into the burning chamber 7. An igniter 11 is mounted in the chamber 7 and a wire conduit 12 extends to the igniter from a contact ring 13 on the hub 2.

A hollow shaft 14 is either keyed to the hub 2 or may be an integral part of this hub if desired. This hollow shaft extends rearwardly and is journaled in the accessory case 15 by suitable bearings 16, 17. A ring gear 18 is fixedly attached to the shaft 14 and this gear meshes with the spur gears 19, of which there may be two or more. The gears 19 are fixedly attached to the shaft of the gears 20, or directly to these gears, if desired. Thus, the gears 19, 20 rotate together. The gears 20 in turn mesh with a gear 21, this latter gear being secured to the supercharger shaft 22. A supercharger impeller 23 is fixed to the shaft 22, and is positioned within the hub 2. An opening 24 is provided in the front of the half 3 of the hub so that blast air can pass into the impeller 23. The blades of the impeller are suitably curved within the area of the opening 24 so as to draw air horizontally into the supercharger, and this air is then compacted, and is thrown radially into the hollow blades 5. The blades 5 are preferably arranged in the hub 3 so that the center lines of the blades are substantially tangent to the periphery of the impeller 23.

It will be evident from the foregoing description that when the propeller is rotating the supercharger 23 will also be rotated, and in geared relation to the rotation of the propeller blades.

Fuel is introduced to the engine through the pipe 25 and the fitting 26, and thence into the bore 27 in the shaft 22 and thence into the impeller 23, where the fuel is mixed with the incoming air passing through the opening 24, and is then carried radially outward into the blades 5 and thence into the burner chamber 7 where the charge is burned and is then jetted outwardly through the port 9 causing a rotative force to be imparted to the propeller blades, and thus driving the aircraft. The accessory housing 15

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is provided with a cover 28 and various accessories (such as the starter 29) may be mounted on this cover and driven by the shafts on which the gears 20 are mounted. The accessory housing 15 is also the oil sump, the oil being distributed to the necessary parts of the engine by the gear train. An over running bearing 30 is provided between the starter gear 18 and the shaft 14, thus providing a means whereby the supercharger can be rotated at high speed for starting purposes.

Having described my invention, I claim:

A jet propeller engine comprising a hub, hollow blades projecting from said hub, a burner chamber adjacent the tip of the blades, said chamber having an opening at the leading edge of the blade, and an exhaust opening at the trailing edge of the blade, a supercharger mounted in said hub, said hub having an air intake opening in the front thereof, extending into the supercharger, and fuel intake means extending into the supercharger, said chamber having an intake port communicating with the hollow blade

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and positioned within said blade, said intake port being Venturi shaped.

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