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FORCED FEED SYSTEM FOR INTERNAL COMBUSTION ENGINES DRIVING SCREW PROPELLERS

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Fig. 1.

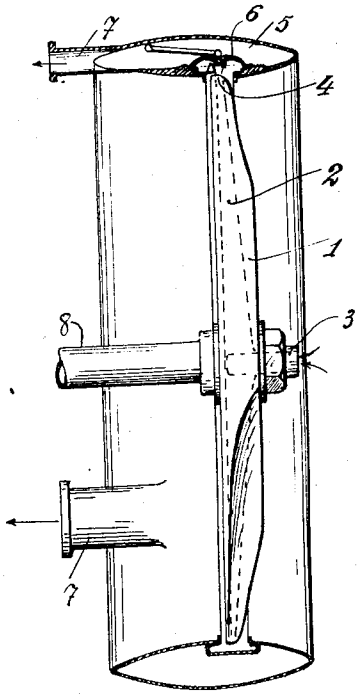
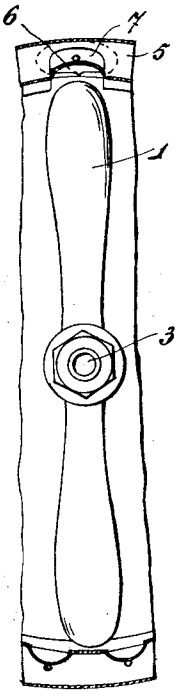


Fig. 2.



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FORCED-FEED SYSTEM FOR INTERNAL-COMBUSTION ENGINES DRIVING SCREW PROPELLERS.

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To all whom it may concern:

Be it known that I, LUCA BONGIOVANNI, subject of the Kingdom of Italy, residing at Turin, Italy, have invented certain new and useful Improvements in and Relating to Forced-Feed Systems for Internal-Combustion Engines Driving Screw Propellers, of which the following is a specification.

This invention relates to forced feed systems for internal combustion engines driving screw-propellers.

It is known that in internal combustion engines used for the propulsion of aeroplanes, difficulties in operation occur due to the shortage of carbureting air by reason of the fact that aeroplanes attain very considerable altitudes.

The different means which have been proposed for effecting a forced feed for internal combustion engines propelling ordinary automobiles are not applicable to those for aeroplanes, on account of their weight and bulk.

The present invention has for its object a system applicable in all cases in which propulsion is effected by means of a screw-propeller driven by the engine.

The accompanying drawing shows, by way of example, and explanation only, a general arrangement in which the improved system can be carried out.

Figures 1 and 2 show, respectively, vertical sections at right angles to an embodiment of the invention, the arrangement shown being only diagrammatic without any constructional details since the system claimed must cover every possible form of practical application.

The essential characteristic of the system is the fact that the screw-propeller is used to produce, by centrifugal action, a current of air which is collected in a collector provided with a series of automatic valves, and in which the current of air is driven to the carburetor, or, in general, to the feeding arrangements of the engine driving the propeller.

In practice, it is necessary that the screw-propeller, which is mounted on shaft 8, should be provided with cavities or passages 2 extending the length and thickness of the blades 1 and provided with two series of openings opening towards the exterior, a central orifice 3 in the boss or openings in the blades opening towards the propeller shaft, thus allowing air to enter from the outside.

The other series of openings 4 open at the extremities of the blades, causing, by centrifugal action, the discharge of the air. This arrangement can be carried out in various ways without departing from the principle of the invention.

The air, flung outwardly in a radial direction is forced into a channel in the form of a ring disposed on the inner side of a collector 5 in the form of a tore.

The cross-section of this collector should be of such a shape that it offers a minimum resistance to the passage of the air.

Along the periphery of this channel are arranged equilibrium valves 6 each having a comparatively large opening, but a small lift. The collector is provided with one or more outlet tubes 7 suitably shaped in order to conduct the air compressed in the collector 5 to the feeding devices of the engine. Obviously, the reception of the air subjected to the centrifugal action and its passage to the engine can be effected by arrangements essentially different from that shown as it is given merely by way of example and explanation without departing from the principle of the invention.

What I claim is:

1. A forced feed device for aeroplane engines comprising a collector in communication with the engine; and a propeller having passages in the blades associated at the outer ends with the collector and the inner ends with a central opening whereby upon rotation of the propeller air will be sucked into the passages through the central opening and will be forced by centrifugal force through the passages into the collector.

2. A forced feed device for aeroplane engines comprising a propeller for driving the aeroplane having passages in the blades and a central opening at the axis of the propeller whereby upon rotation of said propeller by the engine air will be sucked into the passages through the central opening and will be forced radially by centrifugal force through the passages; and means for conducting the air from the passages to the engine.

3. A forced feed device for aeroplane engines comprising a propeller for driving the aeroplane having passages in the blades whereby, upon rotation of the pro-

peller by the engine, air will be sucked into the passages and will be forced by centrifugal force through the passages; and means for conducting the air from the passages to the engine.

4. A forced feed device for aeroplane engines comprising a shaft having a central orifice; a propeller for driving the aeroplane mounted on said shaft and having radially arranged passages in the blades, the inner ends of said passages communicating with said central orifice whereby, upon rotation of the propeller by the engine, air will be sucked into the passages and will be forced by centrifugal force through the passages; and means for conducting the air from the passages to the engine.

5. A forced feed device for aeroplane engines comprising a shaft having a central orifice; a propulsion propeller mounted on said shaft and having radially arranged passages in the blades, the inner ends of said passages communicating with said central orifice whereby, upon rotation of the propeller, air will be sucked into the passages and will be forced by centrifugal force through the passages; and a collector associated with the end of the blades for receiving the air forced from said passages in the propeller.

6. A forced feed device for aeroplane engines comprising a shaft having a central orifice; a propulsion propeller mounted on said shaft and having radially arranged passages in the blades, the inner ends of said passages communicating with said central orifice whereby, upon rotation of the propeller, air will be sucked into the passages and will be forced by centrifugal force through the passages; a collector associated with the ends of the blades for receiving the air forced from said passages in the propeller; and valves in said collector.

7. A forced feed device for aeroplane engines comprising a shaft having a central orifice; a propulsion propeller mounted on said shaft and having radially arranged passages in the blades, the inner ends of said passages communicating with said central orifice whereby, upon rotation of the propeller, air will be sucked into the passages and will be forced by centrifugal force through the passages; a collector associated with the ends of the blades for receiving the air forced from said passages in the propeller; and valves in said collector having a relatively large opening and a small lift.

8. A forced feed device for aeroplane engines comprising a propeller for driving the aeroplane having a radial passage in each blade whereby, upon rotation of the propeller by the engine, air will be sucked into each passage and will be forced by centrifugal force through the passage; and means for conducting the air from the passages to the engine.

9. A forced feed device for aeroplane engines comprising a propeller for driving the aeroplane having a radial passage in each blade and a central opening at the axis of the propeller whereby, upon rotation of said propeller for driving the engine, air will be sucked into each passage through the central opening and will be forced by centrifugal force through the passage; and means for conducting the air from the passages to the engine.

In testimony whereof I affix my signature.

LUCA BONGIOVANNI.