April 18, 1933. A. HALL-BROWN 1,904,134

PROPULSION OF AIRCRAFT

Filed Oct. 27, 1930

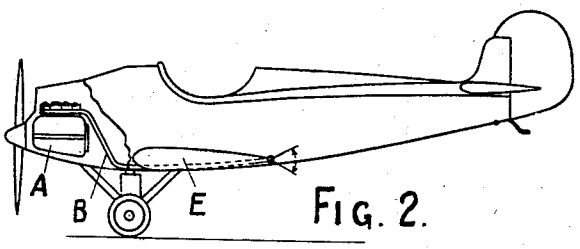


FIG. 2.

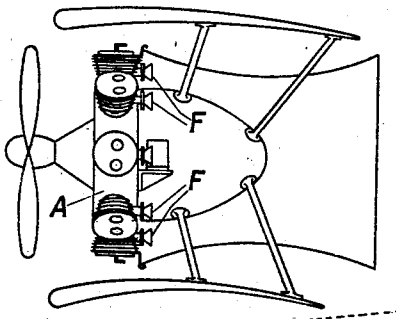


FIG. 3.

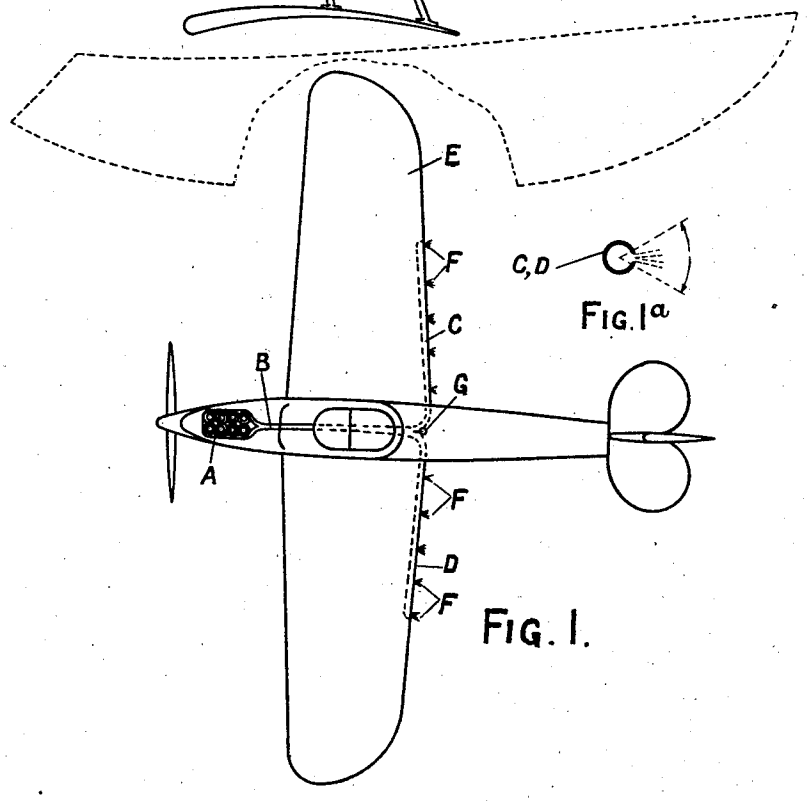


FIG. 1.

FIG. 1a

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UNITED STATES PATENT OFFICE

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PROPULSION OF AIRCRAFT

Application filed October 27, 1930, Serial No. 491,408, and in Great Britain November 7, 1929.

This invention relates to the propulsion of aircraft and has for an object to utilize the exhaust pressure produced by internal combustion engines, either to assist the propulsive effect given by the propeller or propellers, or in substitution therefor.

In accordance with the present invention applied to an aeroplane for example this result is attained by delivering the exhaust gases from the engine at such points in relation to the wings as to give a reaction effect, the exhaust valve settings of the engine being, if desired, so arranged that the exhaust gases will be discharged from the cylinders at higher pressures than at present customary.

In one embodiment the exhaust gases are led through suitable pipes to a number of points on the trailing edge of the aeroplane wing, or wings, so that a proportion of the power not utilized in the engine by reason of the high exhaust pressure will give the desired reaction effect.

Alternatively, or in addition, the reaction effect could be applied at points in the wings specially selected to give additional lift to enable the plane to rise more quickly. The reaction effect might be so applied as to act in a direction opposed to forward movement of the aeroplane so as to function as a brake.

The aeroplane engine might however be of standard form without propeller, and arranged to utilize as high a proportion of its power in the exhaust as possible. Under this condition, theoretically, the engine would function as a pump, and the power developed within it would be only that necessary to pass the petrol or other means of combustion through it to the exhaust.

Two embodiments of the invention are illustrated diagrammatically in the accompanying drawing in which Figs. 1 and 2 show in plan view and in side elevation respectively an aeroplane fitted with devices in accordance with the invention. Fig. 1ª is a detail view. Fig. 3 is a fragmentary view of an aeroplane showing an aeroplane engine fitted with means for producing a reaction effect from the exhaust gases.

Referring to Figs. 1 and 2 A indicates the aeroplane engine, the exhaust valve settings of which are so arranged that the exhaust gases will be delivered from the cylinders at high pressure through an exhaust pipe B leading in the example illustrated to branches C and D disposed along the trailing edge of the wing E, each branch being fitted with a plurality of exhaust jets F delivering the exhaust gases to the atmosphere. The branches C and D of the exhaust pipe may be arranged as shown in section in Fig. 1ª to swivel separately so as to direct the jets upwardly or downwardly or at different angles for controlling purposes. Thus by turning the exhaust branches C and D in such manner that the jets F are directed downwardly an elevating action may be obtained. A valve G may be located in the exhaust pipe B at the inlet to the branches C and D to control the supply of exhaust gas to one or both sides for steering or other purposes.

In the embodiment illustrated in Fig. 3 the exhaust outlets F are arranged to deliver through an open-ended tubular housing of a form adapted to utilize the exhaust gases to produce a propulsive effect.

I claim:—

In an aeroplane, a pipe for collecting the exhaust from the power-plant, branch pipes leading from the rear end of said pipe respectively to the trailing edges of each of the wings, each of said branch pipes being mounted to swivel separately from the others, and each having a plurality of nozzles.

In testimony whereof I have signed my name to this specification.

ARCHIBALD HALL-BROWN.